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**REPORT OF
ENGINEERS COMMITTEE
ST. LOUIS-EAST ST. LOUIS
RAILROAD TERMINALS**



~~76 Home~~
New York



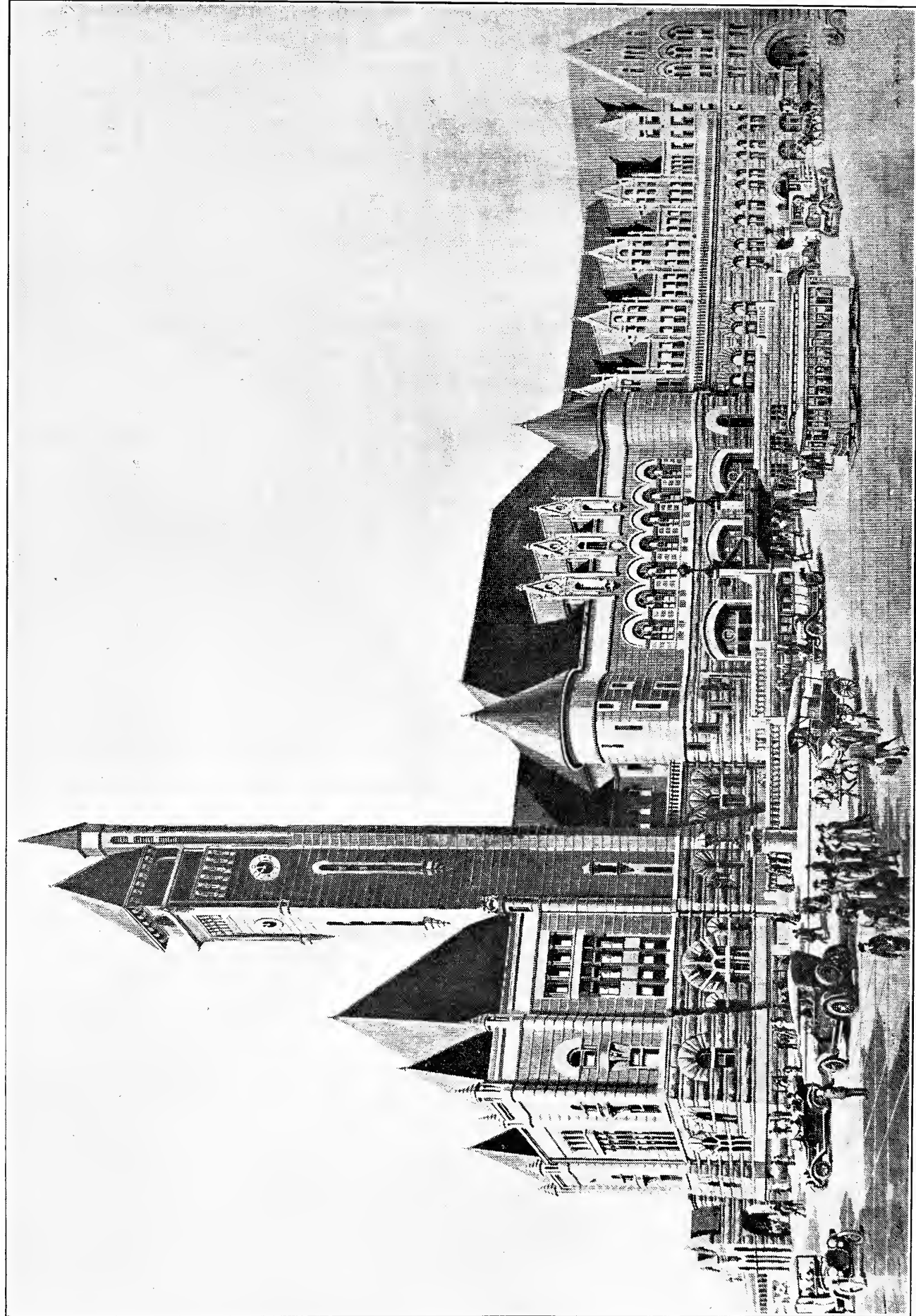


Fig. 1—St. Louis Union Station.

St. Louis Chamber of Commerce Engineers
" Committee.

REPORT OF ENGINEERS COMMITTEE

ST. LOUIS-EAST ST. LOUIS RAILROAD TERMINALS



PERSONNEL OF COMMITTEE

- HARLAND BARTHOLOMEW,
Engineer, City Plan Commission of St. Louis.
- P. W. COYLE,
Traffic Commissioner, St. Louis Chamber of Commerce.
- E. A. HADLEY,
Chief Engineer, Missouri Pacific Railroad Co.
- J. B. HUNLEY,
Engineer, Bridges and Structures, C. C. C. and St. L. Ry. Co.
- R. D. SANGSTER,
Industrial Commissioner, St. Louis Chamber of Commerce.
- C. E. SMITH,
Consulting Engineer for City of St. Louis.
- F. J. STIMSON,
Chief Engineer, M. of W., Southwestern Region, Penn. Lines.
- D. O. THOMAS,
Consulting Engineer, for East St. Louis Chamber of Commerce.
- F. G. JONAH,
Chairman, Chief Engineer, St. Louis-San Francisco Ry. Co.
- CHAS. H. DIEHL,
Secretary, formerly Secretary, Municipal Development Bureau,
St. Louis Chamber of Commerce.

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Consulting Engineers.

ST. LOUIS, MO.
1922

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PREFACE

—o—o—o

In July, 1920, Mr. W. Frank Carter, president of the Chamber of Commerce, appointed a committee to study the terminal situation.

The membership of the committee represents the Associated Retailers, the Chamber of Commerce, the Down-Town Improvement Association, the Manufacturers' Association, and the Merchants Exchange, all of St. Louis, the Chamber of Commerce of East St. Louis and the Railroads.

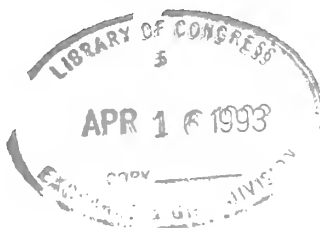
The appointees are: E. C. Andrews, F. B. Chamberlin, W. Palmer Clarkson, J. Lionberger Davis, Aaron Fuller, Thomas W. Garland, Edmund Goedde, J. M. Kurn, Samuel Rea (represented by Benjamin McKeen), N. C. McLean, Samuel Plant, M. L. Wilkinson, A. H. Smith (represented by H. A. Worcester).

Mr. Wilkinson was elected chairman.

Mr. Carter was appointed a member of the Committee December, 1921, after his term as president of the Chamber of Commerce.

At an early meeting, the Committee, by resolution, voted the appointment of an engineers' committee to study the physical situation in the St. Louis-East St. Louis Terminal District and report. The membership of this committee was to consist of the Engineers of two East Side roads, the Engineers of two West Side roads, the Consulting Engineer of the City of St. Louis, the Engineer of the City Plan Commission of St. Louis, an Engineer representing the East St. Louis Chamber of Commerce, the Traffic Commissioner, the Industrial Commissioner and the secretary of the Municipal Development Bureau of the Chamber of Commerce.

This is the report of the Engineers' Committee.



95-1745-13

St. Louis, Mo. March 22, 1922.

Mr. Melville Wilkinson,
Chairman, Terminal Committee,
Chamber of Commerce,
Saint Louis, Missouri.

Dear Sir:

Your Committee, appointed in July, 1920, to investigate the railroad terminal situation in the St. Louis-East St. Louis Industrial District, has the honor to submit herewith its report containing description of the present facilities and methods of operation, with certain conclusions and recommendations for improvement.

It is our belief that the improvements suggested will greatly facilitate the movement of traffic.

The Committee has endeavored to anticipate the transportation requirements of this District for many years to come, in view of which your attention is directed to the recommendation that a standing committee be created to further the carrying out of these comprehensive plans.

Respectfully submitted:

Harland Bartholomew

Engineer, City Plan Commission of St. Louis.

B. Boyle

Traffic Commissioner, St. Louis Chamber of Commerce.

F. A. Bailey

Chief Engineer, Missouri Pacific Railroad Company.

B. H. H. H.

Engineer, Bridges & Structures, C.C.C. & St. L. Ry. Co.

R. J. Taylor

Industrial Commissioner, St. Louis Chamber of Commerce.

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Consulting Engineer for E. St. Louis Chamber of Commerce.

A. E. French

Chairman, Chief Engineer, St. Louis-San Francisco Ry. Co.

Charles H. Bell

Secretary, formerly Secretary, Municipal Development Bureau, St. Louis Chamber of Commerce.

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MEMORANDUM

Copies of illustrations appearing in this report may be obtained in the sizes appearing here and copies of drawings for which original sizes are shown in parenthesis in the preceding list may be obtained in original sizes, at cost, from C. E. Smith & Company, Consulting Engineers, 2073 Railway Exchange Building, St. Louis, Missouri.

CONCLUSIONS AND RECOMMENDATIONS

In arriving at the conclusions and recommendations enumerated below and discussed more in detail in this report, the Committee has endeavored to foresee and provide for the transportation needs of the St. Louis-East St. Louis Industrial District for a long period of years. Consequently the improvements contemplated by the recommendations are very extensive and cannot be consummated at once, nor in a short period of time. Some of the improvements should be undertaken immediately, others may not be required for several years. The improvements are so extensive that they must necessarily be extended over a considerable period of years.

It is most important, however, that the various affected interests agree upon definite plans and methods and that thereafter those plans and methods should be the goal toward which all improvements are directed. No step should be taken that would conflict with them.

With that end in view a committee representative of the carriers and the public should be created to concern itself with the execution of these improvements in their logical order, and to study such further details as time and changing conditions may warrant, to the end that there may be established an ultimate plan and policy of gradual and economical improvement of this terminal in harmony with its needs, and in harmony with other related physical improvements.

Unification

The principle of unification as applied to the St. Louis and East St. Louis terminals has been retained, as far as economically practicable, in reaching the conclusions and recommendations expressed herein. Passenger traffic is already unified.

The Committee recommends the complete unification of the classification and interchange

of cars which constitutes approximately 85 per cent of the freight traffic.

The Committee recommends that each railroad continue to serve the territory local to its own terminals in the St. Louis-East St. Louis Industrial District.

Mississippi River Bridges

Passenger trains should, with the exception of the Wabash trains that use Delmar Station, be removed from the Merchants Bridge and from the congested freight terminals in North St. Louis.

The Eads Bridge and tunnel should be abandoned for railroad traffic.

The Municipal Bridge should be provided with approaches and connections at the following points:

Eighth and Gratiot streets, St. Louis;

South approach to South St. Louis;

North approach to Relay Depot in East St. Louis;

North and south connections at Valley Junction, East St. Louis;

Twenty-ninth street, East St. Louis.

Passenger trains transferred from the Merchants and Eads bridges should be rerouted over the Municipal Bridge.

The Municipal Bridge should be used for such freight as can be handled over it more expeditiously than over other Mississippi River crossings.

The cities of St. Louis and East St. Louis and the railroads should negotiate for the exchange of the use of the Eads and Municipal bridges to accomplish the following:

(a) Upper decks of both bridges to be used for highway traffic free from toll;

(b) Lower deck of Municipal Bridge to be used for traffic of all railroads;

(c) Lower deck of Eads Bridge to be used for street railway and interurban traffic;

(d) The Eads Bridge and tunnel to be abandoned for steam railroad service.

The McKinley Bridge has the capacity for handling a great deal more freight than at present. This bridge should be provided with additional approaches and connections with the tracks of the City of St. Louis and Terminal Railroad Association in Hall street, St. Louis, with the tracks of the Wiggins Ferry, the C. & A. and the Southern Belt at Venice, and with the tracks of the Terminal Railroad Association and other lines north and east of Madison yard.

The communities on both sides of the river should negotiate with the owners of the McKinley Bridge for the elimination of tolls on the highway roadways.

Rerouting East Side Passenger Trains

Passenger trains using the Municipal Bridge should follow elevated routes through the congested freight terminals in the vicinity of Relay Depot, East St. Louis, connecting with surface tracks north of Bridge Junction, east of Relay Depot and south of Broadway, respectively.

At the junction of the elevated routes near the intersection of Main street and Broadway, East St. Louis, a new East Side Union Station should be built.

As a first step and as a part of the East Side approaches and elevated lines, a preliminary approach meeting surface tracks under the present Broadway viaduct should be constructed, affording trains access to the Municipal Bridge.

Extensions of Merchants Bridge Elevated

The Merchants Bridge Terminal elevated structure should be extended from its present terminus north along the river front, crossing North Market street overhead and connecting with the surface tracks of the C. B. & Q. and the City of St. Louis tracks, used by the Terminal Railroad Association.

Passenger trains of the C. B. & Q. and the M. K. & T. should be removed from the congested surface tracks in the North St. Louis freight district and operated over the north extension of the Merchants Bridge elevated tracks.

The Merchants Bridge Terminal elevated structure should be extended south to cross Rutger street overhead and to connect with the tracks of the Missouri Pacific and of the City of St. Louis, used by the Terminal Railroad Association in South St. Louis.

Elevated connection should be built at the river front between the south extension of the elevated and the Mill Creek Valley portion of the elevated.

The elevated tracks should be used for freight trains between North St. Louis, South St. Louis and the Mill Creek Valley.

The Poplar street track of the Missouri Pacific should be taken up between Seventh street and the river front when the traffic now handled over that track can be handled over the Merchants elevated tracks, extended to South St. Louis.

Mill Creek Valley and Union Station

The railroads should acquire all property south of the Missouri Pacific in Mill Creek Valley as far as Gratiot street.

The Missouri Pacific yards should be relocated on the property thus acquired.

With the additional space thus provided the approaches to the Union Station and the railroad facilities in the Mill Creek Valley should be enlarged as follows:

Station tracks should be lengthened;

Approach curves should be flattened;

Engine facilities should be moved west of the station;

All yards for passenger train cars should be moved west of the station;

A train yard for making up and breaking up passenger trains should be provided west of the station;

The inbound baggage room should be enlarged;

The express buildings should be rebuilt nearly double their present size;

New and enlarged facilities for handling mail and parcel post should be provided;

Additional tracks for handling mail, express and other head end cars should be provided;

At such time as the present train shed requires renewal it should be replaced by a modern train shed of the Bush type or umbrella type;

Station platforms should be widened and paved;

The midway should be widened;

Twentieth street, south of Market street, should be moved west to line up with Twentieth street, north of Market street, which will give 140 feet additional Union Station frontage on Market street;

The widening of Market street and the making of two blocks in front of Union Station into a plaza, as in the ordinance recently passed by the Board of Aldermen, should be carried out;

A suburban station should be constructed, facing Market street between Seventh and Ninth streets;

Automobile unloading platforms should be provided near Compton avenue, adjoining the automobile district.

Classification and Interchange of Carload Freight

The present system by which each road classifies its own inbound freight for direct delivery to each railroad with which it connects should be changed and the interchange of freight between railroads should be completely unified.

The present system of individual yards of all railroads and clearing yards of the Terminal Railroad Association should be developed as a system of outer group yards as follows:

Yard No. 1, North: of Granite City: C. & A. C. C. C. & St. L. C. & E. I. C. B. & Q., north. Wabash, east. C. P. & St. L.	Yard No. 2, Near Madison: I. C., north. L. & M. T. St. L. & W. St. L. T. & E.
Yard No. 3, East of Willows: Pennsylvania. B. & O. L. & N. C. B. & Q., east. St. L. & O'Fallon. E. St. L. & Sub.	Yard No. 4, East of Valley Junction: Sou. St. L. & O. R. I. C., south.
Yard No. 5, at Dupon: Mo. Pac. M. & O. St. L. S. W.	Yard No. 6, North St. Louis: M. K. & T. C. B. & Q., west. Wabash, west. C. R. I. & P.
Yard No. 7, West Ivory: Mo. Pac.	Yard No. 8, Near west City limits: Mo. Pac. St. L.-S. F.

All inbound trains with the exception of cars for local delivery on the carrying railroad should arrive at and be classified in these outer group yards.

All outbound trains should be made up in outer group yards or in outer yards of individual railroads adjacent thereto.

Each railroad should continue to serve as heretofore its local terminals, including its freight houses, team tracks and industries.

The railroads should appoint an outer group yard and transfer committee, consisting of representatives of all the railroads, to work out the details, to the end that the present system may be superseded by the new and improved system as soon as possible.

Team Tracks

The Terminal Railroad Association should build additional universal team tracks for the business of all railroads along the following lines:

Wabash between Grand avenue and Forest Park;

Missouri Pacific and St. Louis-San Francisco between Grand avenue and Maplewood;

Missouri Pacific, along the Oak Hill branch, and South St. Louis river front;

Individual railroads, including the Terminal Railroad Association, should add to their team track facilities where most needed by their shippers.

In particular the Terminal Railroad Association should enlarge its team track facilities in the Mill Creek Valley in the vicinity of Sixteenth street and Clark avenue, at Compton avenue contiguous to the automobile market, and from Tyler street to Chouteau avenue along the river front.

Coal dealers using public team tracks should be compelled to provide facilities for unloading coal promptly on its arrival. Public team tracks should not be assigned to coal dealers who use cars as storage bins from which coal is unloaded by hand into wagons as sold.

Team tracks should be so located as to keep out of the congested districts freight that can be handled outside.

Each railroad should make an intensive study of business handled over team tracks for a year of heavy business, noting particularly the origin and destination of team track freight in the St. Louis-East St. Louis District, proper locations and capacity of team tracks should be determined from that study, and thereafter the necessary team tracks be built as quickly as possible in the proper locations.

L. C. L. Freight

The building of on track freight stations in St. Louis for the East Side lines is not recommended at this time.

In the event East Side lines build freight houses in St. Louis in the future, the most desirable location is in the present North St. Louis Freight House District.

The present system of universal off-track freight stations of transfer companies should be extended and enlarged.

Additional off-track freight stations should be built at locations where there is sufficient freight to justify. Service through these stations should be equal to that of the on-track individual freight stations.

Grade Crossings

The delay and congestion in the vicinity of Relay Depot on account of numerous railroad grade crossings should be reduced by decreasing the number of railroad grade crossings.

As a first step the railroads should exchange the freight houses of three railroads as follows:

L. & N. to use C. C. C. & St. L. house;

B. & O. to use L. & N. house;

C. C. C. & St. L. to use the B. & O. house.

By this means the following grade crossings would be eliminated:

C. C. C. & St. L. crossing L. & N.;

C. C. C. & St. L. crossing Eads Bridge tracks;

C. C. C. & St. L. crossing B. & O.;

C. C. C. & St. L. crossing Pennsylvania;

B. & O. crossing Pennsylvania;

B. & O. crossing Eads Bridge tracks.

As a final step the freight houses north of the Pennsylvania should be rebuilt along north and south lines, which will eliminate more grade crossings.

Each railroad should study its highway grade crossing problems in the St. Louis-East St. Louis terminals with representatives of the various communities; general plans should be agreed to for the future elimination of such crossings as it seems desirable to eliminate at some future time, and thereafter in locating industries and making improvements, nothing should be done by either the railroads or the communities that would make it more difficult to eliminate any grade crossings.

River Front Development

The North Market Street Municipal Dock should be completed according to the plans for its ultimate development as rapidly as the requirements of the river traffic necessitate.

The Mississippi River harbor lines should be moved east, south of the Municipal Bridge.

The Mississippi River should be straightened north of the Merchants Bridge.

Electrification

The complete elimination of steam locomotives from the railroad terminals of St. Louis and East St. Louis for smoke abatement is not under present-day conditions necessary.

The complete electrification of the railroad terminals of St. Louis and East St. Louis is financially impracticable.

THE ST. LOUIS-EAST ST. LOUIS INDUSTRIAL DISTRICT

The St. Louis-East St. Louis Industrial District comprises an area in Missouri and Illinois about twenty-five miles square, of which the cities of St. Louis, in Missouri, and East St. Louis, in Illinois, occupy most nearly the central position. Its boundaries are a line east and west through Alton, Ill., on the north, the bluff skirting the American Bottoms in Illinois on the east, the Meramec River, in Missouri, on the south, and a line drawn north and south through St. Charles, Mo., on the west.

The Mississippi River courses in a north and south direction through the central eastern section of the district, and is the boundary line between the States of Illinois and Missouri. Of the approximately 625 square miles within the district, about 225 are in Illinois and 400 in Missouri. The Illinois side consists of what is known as the Great American Bottoms, a low, level, fertile area, bounded on the east by bluffs of rock overlaid with clay about one hundred feet above the Bottoms. The Missouri side is an undulating surface of gently rolling hills, rich valleys and plains, sloping gradually to the Mississippi.

Within the St. Louis Industrial District lives a population in excess of 1,000,000 (U. S. Census, 1920). The population has increased about 50 per cent since 1900, when there was a population of but 690,600. This vast population lives within a centrally located group of cities on either river bank, approximately 135,000 living in Illinois and 875,000 in Missouri.

There are numerous political subdivisions that do not encourage or facilitate easy adjustment of problems essentially common to the district as a unit. The state line, passing through the center of the district, is most un-

fortunate and invites diversity of interests. The Illinois side is bisected by a county line. In Madison County to the north and in St. Clair County to the south are respectively five and four townships, seven and five cities and incorporated villages. The Missouri side of the district has even more numerous political subdivisions. The City of St. Louis occupies a central area, elliptical in shape, 62 square miles in area and having a river frontage of 19 miles. The remaining area comprises St. Louis County (of which St. Louis is not a part) and within which are to be found 14 cities, towns and incorporated villages. The distribution of population throughout the district is shown in the following tables; the principal subdivisions are shown on maps accompanying this report.

East St. Louis (66,740 population 1920 U. S. Census) is the nucleus of a number of rapidly growing satellite cities on the Illinois shore of the Mississippi River. The rapidity of development on the Illinois side may be judged from the fact that the present total population of 135,000 represents an expansion of about 250 per cent in twenty years, there having been a population of but 40,000 in 1900. From the time of the first settler on the Illinois side—Richard McCarty—who came in 1765—periodic floods prevented extensive developments until about 1900. The worst of these floods came in 1844 when a steamboat is reported to have traversed the entire distance of seven miles from the Mississippi to the Bluffs.

East St. Louis early became the principal river crossing point in this vicinity. Here products from the surrounding section of Illinois were ferried to St. Louis where they found a ready market. The first ferry was established by Captain James Piggott in 1797.

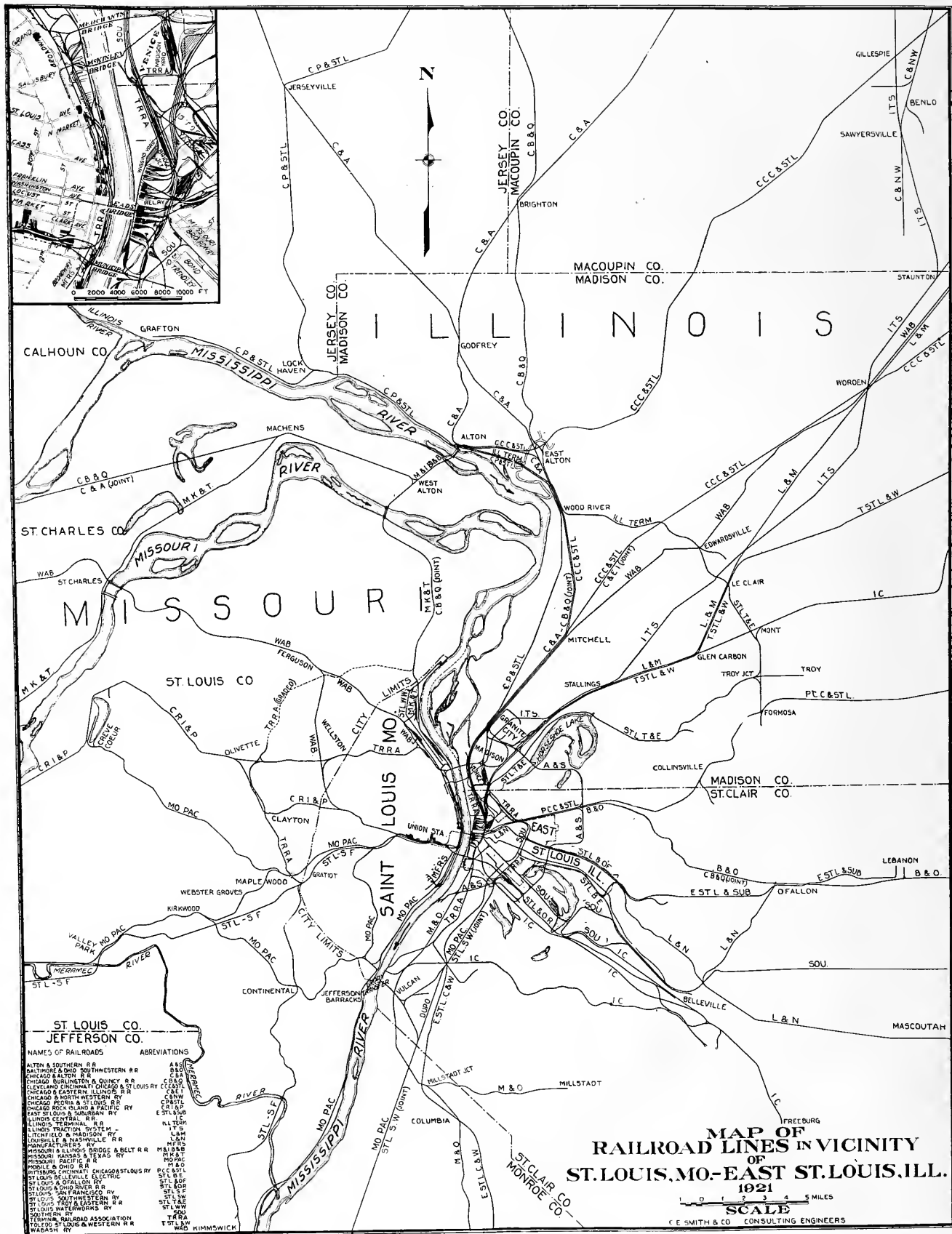


Fig. 2—Railroad Lines in Vicinity of St. Louis, Mo.,-East St. Louis, Ill.

TABLE I—POPULATION ST. LOUIS-EAST ST. LOUIS AND INDUSTRIAL DISTRICT.

	1920	1910	1900
City of St. Louis, Mo.....	772,807	687,029	575,238
St. Louis County, Mo.....	100,737	83,417	50,040
St. Clair County, Ill.—			
Canteen Township.....	3,151	777	.....
Centerville Township.....	3,132	1,940	4,795
East St. Louis Township.....	66,740	58,547	29,655
Sugar Loaf Township.....	2,819	1,702	1,185
Madison County, Ill.—			
Alton Township.....	24,682	17,828	15,241
Chouteau Township.....	818	768	875
Nameoki Township.....	10,833	6,050	2,834
Venice Township.....	10,230	14,421	6,335
Woodriver Township.....	8,793	6,579	4,402
Madison Village (not included in Venice and Nameoki Villages as shown)	4,996	.....	.....
	1,009,828	878,058	690,600

The Wiggins Ferry, of subsequent fame, was established in 1818, steam power first being installed in 1828. In 1836 the first railroad in Illinois was constructed by the Illinois and St. Louis Coal Company from East St. Louis

railroads from the north, east and south, whose vast terminals and rights-of-way were usually constructed above the ordinary flood stage. Four additional bridges—the Alton, the Merchants, the Municipal and the McKinley have

TABLE II—POPULATION OF CITIES, TOWNS AND INCORPORATED VILLAGES.

1920		
City of St. Louis, Mo.....	772,897	St. Clair County, Illinois:
St. Louis County, Missouri:		Brooklyn Village 1,685
Bridgeton Town	121	Dupo Village 1,393
Clayton City	3,028	East Carondelet Village 311
Fenton Village	146	East St. Louis City..... 66,740
Ferguson City	1,874	National City Village 426
Glendale Town	749	Madison County, Illinois:
Kirkwood City	4,422	Alton City 24,682
Maplewood City	7,431	East Alton Village 1,669
Richmond Heights City.....	2,136	Granite City 14,757
Shrewsbury Town	845	Madison Village 4,996
St. Ferdinand City	682	Nameeki Town 1,181
Uniondale City	1,315	Venice City 3,895
University City	6,792	Wood River Village 3,476
Valley Park City	899	
Webster Groves City.....	9,474	937,012

to coal mines on the Bluffs. Horsepower was the means of locomotion. During this period the railroads from the east commenced the building of their lines to the east bank of the Mississippi River at East St. Louis. They naturally built to the ferry landings.

The Eads Bridge, the second structure to span the Mississippi, was completed in 1874. As all railroads were built to reach this bridge the river front of East St. Louis was pre-empted by

since been built across the river within the district. The Stock Yards were established in 1872.

The year 1900 marked the turning point in the history of the east side. In this year was created the East Side Levee and Sanitary District, which, with ample taxing powers, in the twenty years of its existence has done much to relieve flood troubles, and with the completion of its present plans and program will have

eliminated flood trouble and released for industrial use an almost unlimited acreage, low in cost and ideally suited for industrial enterprises.

The Missouri side of the river, being high, well drained and easy of access, quite naturally was the seat of early development and subsequent greatest growth. Here Laclède and Chouteau first established a trading post in the spring of 1764. Trade with the Indians was not sufficiently great to produce marked increase in population so that 40 years later, at the time of the Louisiana purchase, St. Louis had a population of but 1,000 people. The first charter was granted to St. Louis in 1823 when the city's estimated population was 5,500 people, and it was not until the two decades preceding the Civil War that St. Louis' greatest increase in population occurred, the census of 1870 giving a total of 310,864 persons.

While St. Louis has enjoyed a steady increase in growth since the Civil War period, there is no doubt that but for the Civil War there would have been developed here the greatest of America's inland cities, for here was the natural railroad center of the Middle West and the logical central western railroad terminus of the trans-continental railroads. Preceding the Civil War, St. Louis was the largest city in the United States west of the Atlantic Seaboard, but being within the war zone, the principal trans-continental railroads then being built were quite naturally shunted to the north and Chicago soon afterwards rapidly passed St. Louis.

Up to 1900 the growth of St. Louis had been usually within the city limits; whenever development outdistanced the boundaries prior to 1876 these were soon extended sufficiently far to include all outside growth, but they have not been extended since 1876. Since 1900 the increased population of St. Louis has found accommodation chiefly outside the city limits, either in St. Louis County or in East St. Louis, Illinois. St. Louis County increased in population from 50,000 in 1900 to 100,000 in 1920.

A casual knowledge of the St. Louis Indus-

trial District will soon reveal the unity of the area despite the variations in topographic formations and numerous political boundaries. The greater growth on the west bank of the river with subsequent scarcity of readily available cheap industrial property is directly responsible for the quite rapid growth of the east side cities. The heavier forms of industry requiring large, low cost acreage tracts near the Illinois coal fields have found admirable locations in the vast level lands on the East Side away from the center of population where they will not offend with odors, smoke and noise.

The St. Louis District was known essentially as a distributing center, but due to its position and its nearness to a great many raw materials, it has become one of the great industrial districts of the United States. It must continue to grow, and rapidly because it has the one great factor of industrial strength, diversity of industry.

Within a radius of 150 miles are the centers of horse and mule, cattle, hog, corn and farm production. Within a radius of 300 miles are the centers of lead and zinc and oat production and the center of population of the United States. Just beyond the 300-mile radius are the wheat and cotton centers and the geographical center of the United States.

A circle with a radius of 10 miles intersects 30 railroad lines. The favorable position occupied by the district from a railroad standpoint is well indicated by the map accompanying this report, showing parts of the United States and Canada to which merchandise can be delivered in a few days. One day to Chicago, Cincinnati, Nashville and Kansas City; two days to St. Paul, Pittsburgh, Mobile and Omaha; three days to Duluth, New York City, New Orleans, and Fort Worth, four days to Northern Michigan and Canada, Boston, Florida, San Antonio and Denver.

It is at once the central raw material market, the manufacturing center, and the center of distribution. Of the natural resources of the district little has been said. In addition to the rich agricultural resources an abundance of limestone is available for various uses, and,



Fig. 3—Relation of St. Louis to Various Centers of Production and Distribution.

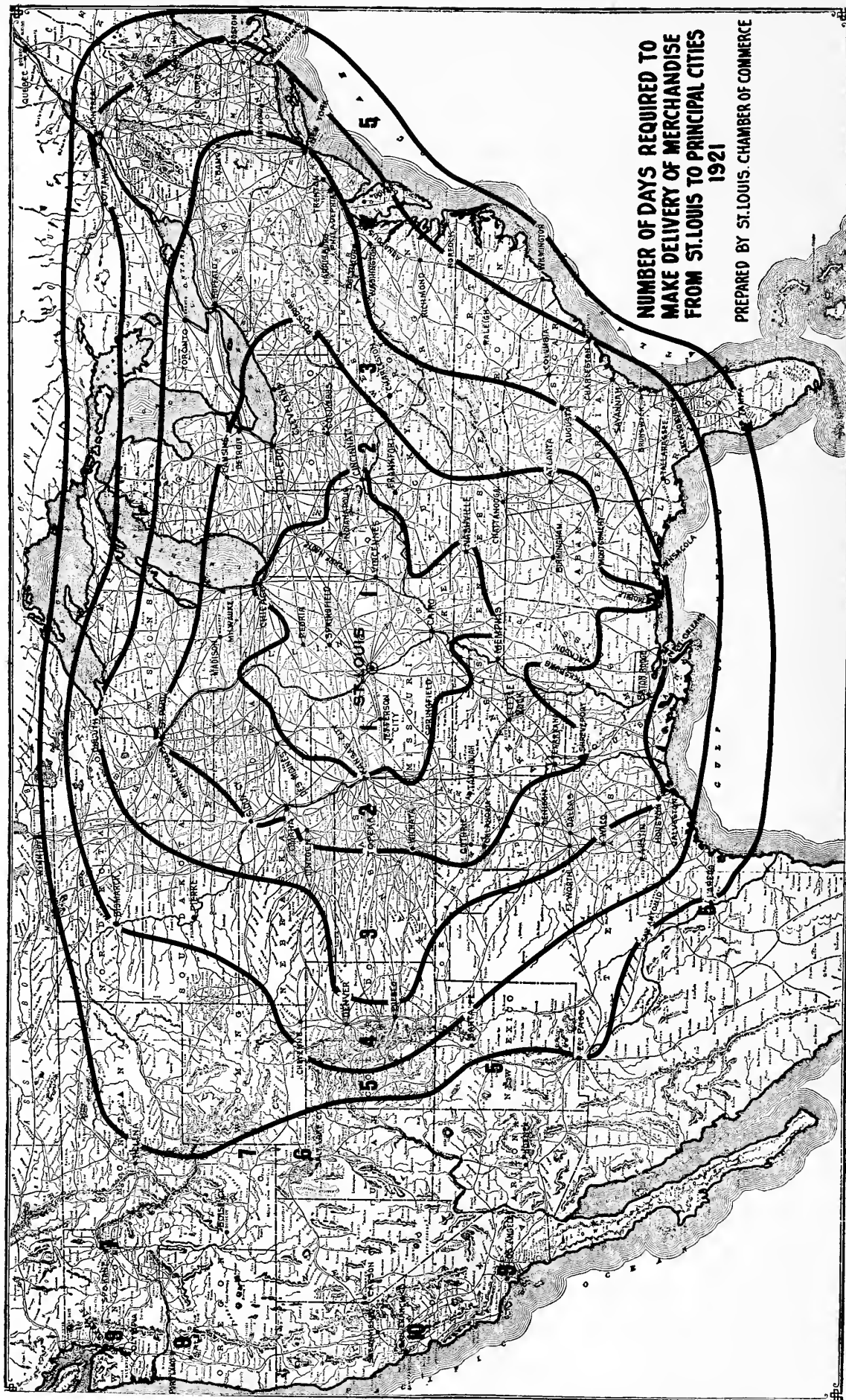


Fig. 4—Number of Days Required to Make Delivery of Merchandise from St. Louis to Principal Cities in the United States.

with shales also found in abundance, is used for the manufacture of Portland Cement. In this district is to be found one of the finest fire clay deposits, from which is made great volumes of brick, tile, pipe, terra cotta and similar products. Sand and gravel are found in great abundance and of excellent quality.

The greatest of the raw materials here found, however, is the coal of Southern Illinois. From the mines, at our very door, is produced more than one-twentieth of the total coal supply of the world. After years of patient effort and success, a process for coking the coal has been found and a \$10,000,000 plant for this purpose has recently been completed and put in operation. The significance of this industry can be judged in its relation to the future development of the iron and steel industry alone when it is realized that the Illinois mines contain greater deposits of coking coal than the combined fields of Connellsville, which supplies Pittsburg, and the Birmingham district. Of further great significance is the relation which this industry will bear to the development of our drug and chemical industries through the infinite de-

rivatives obtained from the coal tar by-products. This district has a great future as an iron and steel center as coke and iron ore can be assembled here at less cost than at Pittsburgh.

The district is conservative in thought and action. Its conservatism has been an asset and has preserved its distinctive character and its well known financial stability. Within the past few years there has been a deliberate effort in St. Louis and East St. Louis to plan for future growth. City plans for the development of a well co-ordinated street system, transit facilities, recreation grounds, etc., have been prepared and numerous measures undertaken. None of these studies has yet comprehended the entire Industrial District, largely because of want of jurisdiction.

It is peculiarly significant therefore, that this, the first comprehensive study of the entire district treats of railroad transportation, the basic factor in any scheme of development. This study, it is hoped, will be the forerunner of a series of similar planning studies of this important industrial area.

HISTORY OF RAILROAD DEVELOPMENT

St. Louis was founded long before the development of the steam railroad, and, for good topographical reasons, upon the west bank of the river, the site selected being the first high rolling ground south of the junction of the Missouri, Mississippi, and Illinois Rivers, then the only means of transportation in a large part of the Middle West.

The railroad development of the United States beginning on the Atlantic seaboard, proceeded generally along east and west lines, and reached the Mississippi, opposite St. Louis in the early fifties of the last century. The lines were built to the river bank at right angle thereto, and as close to the ferry landings as possible, which accounts for the location of numerous yards side by side in East St. Louis.

Simultaneously with the development on the east side, railway construction began in St. Louis with what is now the main line of the Missouri Pacific, a short section of which was opened for traffic in 1852.

The West was at that time an undeveloped region and the business of the City was with the eastern part of the country; thus St. Louis had its railways located in another state, separated by a great river without bridges, and it is owing to the disadvantages of this physical and political situation that a large part of the subsequent transportation difficulties of the City are due.

A full twenty years elapsed before the river was bridged, and in that time the railway terminals and trunk lines had taken shape upon their present locations. There had been many years of agitation for a bridge. The ferries, upon which the commerce of the City had to be handled to and from the east side, were slow and often interrupted by ice.

The great genius and untiring energy of Captain Eads was finally rewarded by the

successful opening of the magnificent structure which bears his name, July 4, 1874.

There had been powerful opposition to the construction of a bridge. The steamboat interests opposed it. Their opposition had much to do with the location of the structure. Captain Eads, a river man himself for a number of years, fully appreciated the importance of their opposition. In his report on the bridge and concerning its location, he says:

"As a matter of convenience to the marine interests, the location at Washington avenue must be deemed judicious. It is idle to talk of bridging the river and planting piers in its channel without obstructing navigation. No matter how wide the spans may be, every pier that is placed in the river is an obstruction calculated to create danger and cause anxiety to those who navigate it. By the location at Washington avenue, the wharf is nearly equally divided above and below the bridge. This will make it unnecessary for the steamers trading on the upper river to pass under the structure, whilst those engaged on the Ohio and the lower rivers will seldom be required to pass above it.

"If the bridge were located in the upper portion of the city, all of the upper river boats would have to pass and repass it every trip.

"From all these facts, I feel confirmed in asserting that at no other location could the bridge be erected so cheaply; at no other would its revenue be so great; at no other point opposite your city would the public at large be so well accommodated."

The bridge was accordingly located in the best place to serve the river interests, in a place where they would be least disturbed. It was not a good location from a railway point of view, as its west end landed upon rising ground, necessitating the use of a tunnel to reach any railway connections in the city.

Almost another twenty years elapsed before the great traffic crossing the Eads Bridge was relieved by the construction of the Merchants Bridge and the Merchants Bridge Terminal Railway. The bridge itself was formally

opened May, 1890; but, owing to the fact that adequate connections had not yet been provided, it did not become a factor of importance in the transportation system of the city until the early part of the year 1893—after the elevated structure on the levee, and other important connections had been made on both sides of the river.

The traffic conditions of the city and the necessity of additional industrial areas for development amply warranted the construction of this bridge at that time. The great industrial development of Granite City, Madison, and North St. Louis is due directly to the construction of the Merchants Bridge and Terminal Railway. On the west side of the river the tracks of this company were laid for the most part in city streets, although it built the elevated structure on the levee, but from Carr street north to the west approach of the bridge the tracks are almost wholly in public streets, preventing adequate expansion along the line and leading to a slow congested movement of trains.

This company started, and partially completed, the only section of a belt line in operation around the City of St. Louis.

The Terminal Railroad Association was formed in 1889, the proprietary lines then being—

Baltimore & Ohio Southwestern Railroad,
Cleveland, Cincinnati, Chicago & St. Louis
Railway,
Missouri Pacific Railway,
St. Louis, Iron Mountain & Southern Rail-
way,
Louisville & Nashville Railroad,
Wabash Railway.

In 1902, the following lines joined the Association:

Chicago & Alton Railroad,
St. Louis-San Francisco Railway,
Pittsburgh, Cincinnati, Chicago & St.
Louis Railroad,
Chicago, Rock Island & Pacific Railway,
Southern Railway,
Illinois Central Railway,
Missouri, Kansas & Texas Railway,
Chicago, Burlington & Quincy Railroad,
and in 1910, the
St. Louis Southwestern Railway.

The following lines are not members of the Association:

Mobile & Ohio Railroad,
Chicago & Eastern Illinois Railroad,
Toledo, St. Louis & Western Railroad,
Alton & Southern Railroad,
St. Louis, Troy & Eastern Railroad,
St. Louis & O'Fallon Railway,
Litchfield & Madison Railway,
Chicago, Peoria & St. Louis Railroad,
Manufacturers' Railway,
East St. Louis & Suburban Railway,
Illinois Traction System,
St. Louis & Ohio River Railroad.

The mileage of the lines entering St. Louis and East St. Louis is 80,000, or about 30 per cent of the entire mileage of the United States. The lines not members of the Terminal Association are, for the most part, comparatively short local lines aggregating less than 3,000 miles; and with all the trunk lines members of the Association, it is apparent that no city in the United States offers so good an opportunity for unified control and operation of terminal facilities as does the St. Louis and East St. Louis Terminal District.

The McKinley Bridge was completed in 1910 to serve the electric lines of the Illinois Traction System. It is believed that some considerable use can be made of this structure for the carrying of freight across the river, although up to the present time its business has been almost exclusively the handling of passengers and express.

The Municipal Bridge was erected in 1916. Its location is on practically a continuation of the Mill Creek Valley, the natural location for railways leading westwardly from St. Louis, and it is thus in the logical location to handle railway traffic, for which purpose it has a double track railway deck, but as yet not provided with adequate railway connections.

The situation of St. Louis previously referred to, namely, business on one side of the river and freight houses on opposite side, necessarily lead at once to the development of a transfer service. At first, this was performed by ferry, on which cars were carried across, and by wagons and teams on the ferries. Later, when Eads Bridge was constructed, by teaming across, and at present, by both teams and motor trucks over that structure. Several

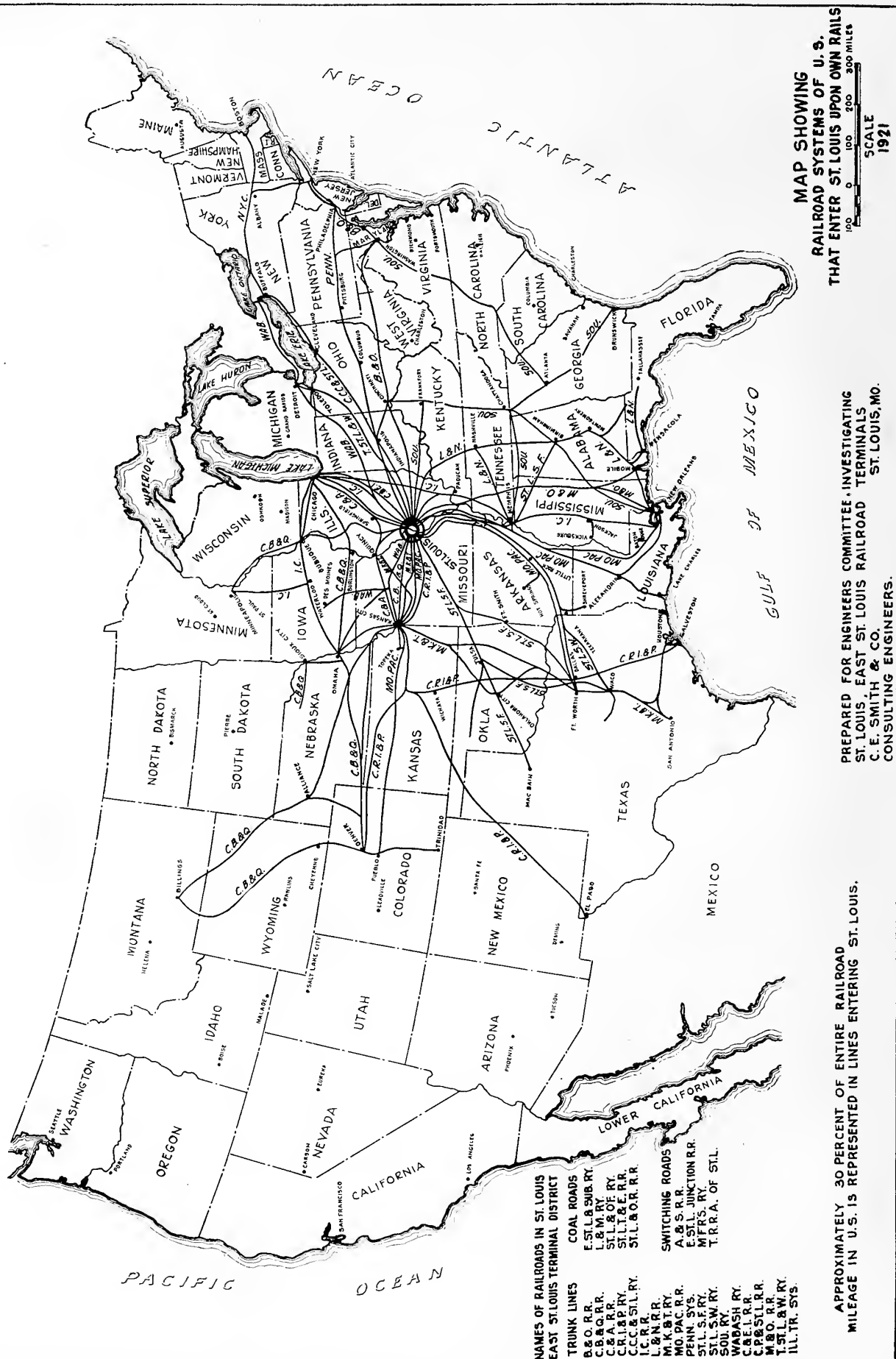


Fig. 5—Railroad Systems That Enter St. Louis Upon Their Own Rails.

companies are now engaged in this business, and it has been developed into an efficient operation. Several warehouses of substantial construction have been erected in various parts of the city, which serve as off-track stations for the handling of l. c. l. shipments. A recent development is the use of a tractor with trailer, which affords economical expeditious service between the transfer companies' warehouses and the freight houses of the railway companies. A regular service is maintained by

these transfer agencies, so that shipments received in their warehouses up to a certain hour of the day make outgoing freight trains of the various roads in the evening. This service is also largely used by the railroads in transfer of through l. c. l. merchandise handled between connecting lines.

The system in effect in St. Louis has been favorably commented upon by experts studying the handling of l. c. l. freight in large cities.

THE SCOPE AND PURPOSE OF THIS INVESTIGATION

While there are certain definite phases of desirable improvements in the transportation facilities in the St. Louis-East St. Louis Industrial District that could be taken up as individual problems, such phases are to a large extent interwoven. For this reason the committee after a review of the general situation decided to consider the various problems with reference to their relation to a comprehensive scheme for the rearrangement and future development of the railroad terminal facilities. Each phase of the situation was studied and is treated individually, but always with a view as to the effect that any proposed changes will have upon the ultimate development.

With such a thought in mind, attention early in our study was given to formulating certain fundamental principles which should be kept in mind in the development of a comprehensive plan. As a result the following principles were formulated and have been followed as a general guide in our studies of the various problems and in developing our plans for the solutions of such problems.

1. Any needless duplication of railroad facilities is wasteful and should not be continued. The rearrangement of such facilities should be accomplished for economical operation.

2. Unified control and operation of all railroad lines and facilities within the limits of the St. Louis-East St. Louis Industrial District are essential to accomplish such result. Such rearrangement, unified control and operation will be limited by economical and practicable considerations.

The entire question of railroad service should be considered as a whole, not with relation to one system or one part of the Industrial District.

3. Protected industrial districts appropriately and conveniently situated are necessary. Once such districts are established the municipality should plan its improvements and regulations so that both railroads and industries

can feel safe in concentrating large investments for permanent facilities not otherwise justified.

4. L. C. L. freight houses and terminals should be so located and arranged that the least possible time will be consumed between road haul and shipper's platform. In accomplishing this the first consideration should be the minimum time between freight house doors and road haul; second, the accessibility to the shipper, keeping in mind the use of the motor truck.

5. The separation of through traffic and interchange, from railroad facilities located in the congested business district is desirable to the end that the facilities in the congested districts may be used advantageously for local service. The separation and interchange may be accomplished by diverting through traffic over outer belt lines.

6. Adequate classification and freight yards and interchange tracks should be located outside of developed city areas.

7. All agencies of transportation—rail, water and highways, should be recognized and correlated into a well-balanced scheme for expeditious movement and interchange.

In order to develop a rational plan, which, if followed step by step would ultimately provide a well-balanced and equipped system of tracks and terminal facilities, which would be capable of handling not only the present traffic, but a reasonable future development both in volume and character, it was obvious that data must be collected from each carrier, giving in detail facts as to its present facilities, statistics as to actual volume and character of its business, both inbound and outbound, its movement and routing from the termination of the road haul until delivery to its freight house or to another carrier.

To obtain this information, little or none of which had been collected or was of record, a questionnaire was sent to each road, requesting

information as to its facilities for handling its business, together with certain traffic statistics as to the number of cars handled during a certain period, both carload and l. c. l. divided as between local and through delivery—number of cars and point of delivery for interchange and much other information as shown in a copy of the questionnaire which is appended hereto. It was realized that a reply to the various questions involved a large amount of work, but it was felt, and subsequent developments justified this opinion, that all of the information requested was necessary to intelligently plan the proper additional facilities and rearrangement and combination of facilities to handle the traffic both economically and expeditiously. Traffic statistics for the month of October, 1920, were requested, as this period represented a normal volume and movement, it was current with the receipt of the questionnaire, and information for a longer period of time would be very difficult, if not impossible, to obtain.

As replies to the questionnaire were received, the information was tabulated and compared, and where apparent omissions or discrepancies existed or where some doubt arose as to the correctness of some of the information received, the railroads' records were examined by engineers and clerks employed by the Committee and the replies checked, amplified and corrected where errors in reporting were found. The data secured undoubtedly makes available much information not heretofore collected, and brings out many interesting features of operation.

Movement diagrams and charts were prepared from the information obtained, so that actual conditions could better be visualized and these various diagrams clearly bring out the congested routes and districts, and the interference of the movement of trains of one road with those of another, the comparative density of movements and many other features which were valuable for an analysis of the situation with a view to possible improvements.

REPORT OF PREVIOUS COMMITTEE OF BUSINESS MEN'S LEAGUE OF ST. LOUIS

Early in 1903, just prior to the World's Fair at St. Louis, the Business Men's League appointed a "Terminal Facilities Committee" to investigate and report on the inadequacies of the terminal facilities, in response to an appeal of large business houses, in part, as follows:

"To the President and Executive Committee of the Business Men's League:

"Gentlemen: The shipment of goods into and out of St. Louis has been for some time greatly hampered by what we believe to be a lack of adequate terminal facilities, causing delay, annoyance and great financial loss to the merchants and manufacturers of our city.

"The difficulties arising from these conditions recur with greater frequency year by year. The commerce of St. Louis has greatly increased in the last ten years without proportionate increase of facilities for handling it.

"We, the undersigned members of the Business Men's League, respectfully call your attention to the condition of affairs, with the request that steps be taken at the earliest possible moment to confer with the proper officials for the purpose of improving upon the present methods of handling shipments to and from St. Louis, with the further object in view that railroad lines deliver all freight intended for St. Louis in St. Louis.

Rice-Stix Dry Goods Co., Elias Michael, Sec'y.
Carleton Dry Goods Co., Murray Carleton, Pres.

Ely & Walker Dry Goods Co., D. R. Calhoun, Pres.

Hargadine-McKittrick Dry Goods Co., E. S. Lewis, Second Vice-Pres.

Ferguson-McKinney Dry Goods Co., Forrest Ferguson, Pres.

Butler Bros., by Jos. R. Barroll.

LaPrelle Shoe Co.

The Brown Shoe Co., G. W. Brown, Pres.

The St. Louis Shoe Co., B. D. W. Pomeroy, Acting Treas.

Hamilton-Brown Shoe Co., R. F. Spencer, Treas.

Giesecke-D'Oench Shoe Co., R. B. Grant, Secy.
Geo. F. Dittman Boot & Shoe Co., W. Biebing, Sec'y and Treas.

Boogher, Force & Goodbar Hat Co., Howard Boogher, Sec'y.

White, Branch, McConkin Hat Co., Wm. N. McConkin, Sec'y.

Gilmore & Ruhl, by J. A. Ruhl.

J. Kennard Sons Carpet Co., J. B. Kennard, Vice-Pres.

Trorlicht, Duncker & Renard Carpet Co., L. Renard, Sec.

The Courtney Shoe Co., Leslie Courtney, Pres.
Wertheimer-Swartz Shoe Co., G. W. Milius, Vice-Pres.

Goodfellow-Brooks Shoe Co., by Elgin S. Brooks, Sec'y.

Friedman Bros. Shoe Co., A. Friedman, Treas.
Vinsonhaler Shoe Co., per G. E. L.

Peters Shoe Co., H. W. Peters, Pres.

Gauss-Langenberg Hat Co., F. J. Langenberg, Pres.

Rothschild Bros. Hat Co., by Adolph Bernd, Treas.

Harris-Polk Hat Co., W. G. Eversole, Sec'y and Treas.

Levis-Zukoski Mercantile Co., W. A. Zukoski, Sec'y.

Rosenthal-Sloan Millinery Co., W. G. Sloan, Vice-Pres.

Woodward & Tiernan Printing Co., W. B. Woodward, Manager.

A. J. Jordan Cutlery Co., A. Maschmeyer, Manager.

Schwab Clothing Co., Leon J. Schwab, Vice-Pres.

Bohm Bros. F. G. Co., Edwin Bohm, Sec'y and Treas.

Norvell-Shapleigh Hardware Co., S. Norvell.
Scruggs, Vandervoort & Barney Dry Goods Co., by R. M. Scruggs, Pres.

Corticelli Silk Co., by C. C. Child.

Adolph Glaser & Co., A. Glaser.

D. Crawford & Co.

Stix, Baer & Fuller Dry Goods Co., per S. Baer, Sec'y.

B. Nugent & Bros. Dry Goods Co., by F. C. Lake, Sec'y and Treas.

Wm. Barr Dry Goods Co., I. Franklin, Pres.

King, Brinsmade Mercantile Co., H. B. King, Treas.

Ben. J. Strauss & Samish, J. E. Black.

Gaier & Stroh Millinery Co., E. B. R.
John L. Boland Book & Stat. Co., John L.
Boland, Pres.
Jos. M. Hayes Woolen Co., Jos. M. Hayes,
Pres.
Tennent Shoe Co., Geo. B. Meller, Sec'y.
Mayfield Woolen Mills Clothing Co., J. D.
Simpson, Sec'y and Treas.

The Committee reported September 12, 1903. Extracts from the report pertinent to the present investigation, are as follows:

"The committee found that the handling of freight was so closely interwoven with the management of passenger travel, both to a large extent using the same facilities, that the one could not be intelligently considered or fairly treated without the other, in consequence of which your committee was compelled to include conditions affecting the passenger travel in its examination.

"As a general rule, it was found the facilities for handling the traffic on both sides of the river are totally inadequate. The lack of sufficient yard room interferes with the free and rapid movement of cars, and lack of station room prevents the loose freight from being removed promptly or economically.

"The railroads centering in St. Louis have added enormous mileage to their systems during the last twenty years, originating a large amount of business, and bringing to the St. Louis gateway, from one side, in addition to a constantly increasing tonnage from old territory, the products of this newly developed country, in the shape of cotton, grain, cattle, lumber, and all that comprises the make-up of railroad traffic; from the other side they bring to the St. Louis gateway the steadily growing current of manufactured articles and general merchandise that makes up the great business activity of the country; but the size of the gateway has practically remained the same. It is very much like constantly enlarging both bulbs of an hour-glass without increasing the size of the throat, and yet expect the process of passing the increased quantity through the throat to continue as before and in the same time.

"In examining the situation on the east side of the river your committee found, in addition to insufficient terminals, methods in vogue that are crude, primitive and totally out of harmony with the spirit of the age, methods that are the outgrowth of conditions antedating the bridges.

"Trains of cars, partly loaded with freight for St. Louis and partly for points west of St. Louis, are emptied into inadequate sheds on

the east side, then picked over, partly loaded into wagons and partly reloaded into cars for destination in St. Louis and railroad connections for destination westward.

"The transfer across the river by wagon is a long, laborious haul, consuming considerable time, and subject to many contingencies. If there is any delay in the unloading of wagons, either at the store of the merchant or at railroad lines on the west bank of the river, freight accumulates in the east side yards and a congestion is the result.

"If the cars on the east side cannot be promptly unloaded, owing to the accumulation in the sheds, the tracks are soon blocked and the movement of freight becomes slow and difficult. In the meantime, cars are held on the west bank of the river, and all traffic is impeded, interfering not alone with the St. Louis merchandise traffic, caused by the accumulation of freight intended for points beyond St. Louis, but also with outgoing eastbound freight, intended for customers of St. Louis merchants and manufacturers, and with the free and rapid handling of passenger trains, entailing poor service in all directions.

"Conclusions of the Committee. After a careful examination of the conditions here outlined and a personal examination of the terminal facilities on both sides of the river by your entire committee, your committee is of the unanimous opinion that the only solution of the question that will overcome, in a permanent way, the oft-recurring difficulties, is that there should be provided, at the earliest possible date, terminals and freight houses on the west bank of the river, in the City of St. Louis, within reasonable hauling distance of the business districts of the city.

"These terminals and freight houses must be of ample size to promptly take care of all commerce to and from the territory east of St. Louis, and should, if possible, be located along the river front, in the vicinity of Washington avenue.

"Freight houses, terminals and yards in North St. Louis and South St. Louis and in the Mill Creek Valley should be enlarged, and in some cases reconstructed to care for the constantly increasing traffic originating in St. Louis for transportation west, north and south.

"Additional yard room for the storage of coal cars, both full and empty. Additional yard space for the storage of passenger coaches after they have discharged their loads and waiting to again be used on outgoing trains.

"The space in front of Union Station should be enlarged to permit a rapid and safe approach to and exit from Union Station."

The report described in general the extensive improvements then under way on the property of the Terminal Railroad Association in preparation for the World's Fair.

The report was signed by:

"Elias Michael, Chairman,
John E. Pilcher,
D. R. Calhoun,
Homer P. Knapp,
Hugh McKittrick,
J. J. Wertheimer,
R. W. Shapleigh,
G. W. Brown."

After a number of conferences between the Committee and railroad officials, the Terminal Railroad Association agreed for its lines:

"That they will furnish terminal facilities on the west side of the river, in the City of St. Louis convenient to the business districts of St. Louis, and agree to spend not less than one million dollars in the next two years, for the purpose of furnishing such facilities as may be required for handling inbound freight from the East, and freight originating in St. Louis, intended for the East, and continue to increase such facilities as may, from time to time, be necessary."

This Committee secured the consent of the railroads to extend East St. Louis rates to St. Louis on long haul traffic.

In 1905, when the recommendations of the Terminal Facilities Committee were presented to the city officials, the Municipal Assembly of the City of St. Louis passed an ordinance authorizing the Mayor to appoint a "Municipal Bridge and Terminal Commission."

"First: To investigate and determine the nature and extent of the hindrance to the commerce of St. Louis, whether as regards delay or inconvenience in the handling of freight, or disadvantageous charges or methods of shipping, or billing of freight, or in any other regard.

"Second: After the Commission shall have determined what hindrances and disadvantages to St. Louis commerce do in fact exist, then the Commission shall further determine what must be done to correct said existing hindrances to the commerce of St. Louis. The Commission shall determine and announce what portion of the necessary remedial action shall be undertaken by the City of St. Louis as a municipality, and what portion by the citizens thereof or by associations of citizens, to the end that all the people of St. Louis may know the facts as they exist, and being con-

vinced as to the best way to remedy the situation, may all unite their efforts to accomplish practical relief."

The Commission reported July 6, 1906, in part as follows:

"While we do not oppose, but would encourage a considerable development of individual railroad facilities, it seems to us that the development of freight houses and team tracks most in line with economy and the most widely extended service, is that they should be furnished by a combination of the various railroads and operated for the joint benefit of all the railroads and the public. The association or agency that provides these facilities should not be a corporation doing terminal business for a direct profit, but should be organized and clearly recognized as the agency of the combined railroads, acting for and representing each."

The Commission called attention to the insufficiency of team tracks for unloading and loading freight, and especially dwelt on the inadequate local freight houses on the east side, and practically the entire absence of freight houses of east side lines at St. Louis, and reported that the immediate necessities were additional team tracks and freight houses.

The Commission also recommended additional connections between the Mill Creek Valley and the levee, and additional freight yards. The Commission recommended that in order to provide further facilities for crossing the river at St. Louis and to relieve passenger trains from the delay and annoyance of traversing congested freight terminals of North St. Louis, or passing through the tunnel, a new bridge be built crossing the Mississippi River at the east end of the Mill Creek Valley. A four track bridge was recommended, without a highway, the estimated cost being \$8,000,000. The location recommended was the foot of Poplar Street.

The above conditions are set forth here in such detail for the reason that many of the results sought to be accomplished by the Terminal Facilities Committee of the Business Men's League in 1903 and by the Municipal Bridge and Terminal Commission in 1906, and many of the improvements which they recommended as absolutely necessary to enable the railroads to keep up with the industrial growth of St. Louis, have not been consummated, owing, in some instances, to changed conditions.

UNIFICATION—APPLICATION TO ST. LOUIS- EAST ST. LOUIS RAILROAD TERMINALS

In the first tentative study by the Interstate Commerce Commission of railroad consolidations no less than ten groups reached St. Louis; it may be taken for granted that in any scheme of grouping, St. Louis will have more independent companies than any other city. Consequently the terminal situation will always be of interest to a number of companies and the importance of the terminal problem will not be decreased by the proposed consolidations.

Local conditions at St. Louis and East St. Louis, such as the great expense of Mississippi River bridges have already resulted in considerable unification of terminal facilities in the Terminal Railroad Association of St. Louis. It was manifestly impossible for each railroad to provide terminals on both sides of the river and to provide its own river crossing facilities. Consequently, it was natural that one company should develop such facilities for the use of all.

The Terminal Railroad Association has become the most notable example in the United States of progress in unification of railroad terminals. Its facilities have been developed on the "co-operative" theory as distinguished from the "competitive" theory under which the facilities of individual railroads are usually developed.

At the same time, however, each railroad has developed its own terminal facilities to a greater or less extent on one or both sides of the river on the competitive theory, while also relying on the facilities of the Terminal Railroad Association for additional advantages.

The terminal facilities of the individual railroads are much more extensive than those of the Terminal Railroad Association, and it is doubtful if the railroads would willingly give up their terminal facilities to any unified agency. It is also doubtful whether the complete unification of the terminal facilities of all lines at St. Louis and East St. Louis would benefit the public or the railroads.

Great benefits and savings will result, however, from unifying the classification and inter-

change of all cars to and from points beyond the terminals of the individual railroads, thus leaving to the individual railroads the service to and from and the business of their local terminals.

Even the latter might be unified if all the railroads possessed equal advantages in location and facilities, but unfortunately that is far from the case.

For instance, in St. Louis the Missouri Pacific and Wabash are in possession of extensive terminals having about 55 per cent of all St. Louis industries on their rails. Likewise the Southern in East St. Louis, by its ownership of the Venice and Carondelet Belt has over 25 per cent of all East St. Louis industries on its rails. No other railroads enjoy anything like the advantages of those mentioned. There appear to be no compensating advantages that would justify those roads turning their facilities over to a unified agency as a result of which their competitors would enjoy equal advantages and opportunities for road haul business in their local terminals.

While the Committee believes that the greatest possible unification of railroad terminals is desirable, it finds that such facilities in the St. Louis-East St. Louis District cannot be unified completely without unduly benefiting some and injuring other railroads. It recommends that the present companies go as far in that direction as is economically practicable.

The principle of unification, as applied to the St. Louis-East St. Louis railroad terminals has been retained by the Committee, as far as economically practicable, in reaching the conclusions and recommendations contained in this report.

A later chapter of this report contains a general discussion on unification of railroad terminals with extracts from Committee reports and from papers and addresses of qualified railroad and municipal officers bearing on this important subject.

MISSISSIPPI RIVER CROSSINGS IN ST. LOUIS- EAST ST. LOUIS RAILROAD TERMINAL DISTRICT

Descriptive

There are four Mississippi River bridges within the city limits of St. Louis, as follows, commencing at the north:

Merchants Bridge, controlled by Terminal Railroad Association of St. Louis, about three miles north of the Eads Bridge;

McKinley Bridge (electric) controlled by Illinois Traction System, about 2 miles north of the Eads Bridge;

Eads Bridge, controlled by Terminal Railroad Association;

Municipal Bridge, owned by the City of St. Louis, about one mile south of the Eads Bridge.

Illustrations accompanying this report show locations, photographs, profiles and alignments of the four bridges. They are all fixed bridges, high enough to avoid draw spans. All the Trans-Mississippi business of the Terminal Railroad Association is handled over the Merchants and Eads bridges.

In addition to the bridges within the city limits, there are two railroad river crossings outside the city limits but within the St. Louis-East St. Louis Terminal District, as follows:

The Missouri Pacific Railroad has a car ferry just south of the St. Louis city limits, 8 miles south of the Eads Bridge, known as the Ivory Transfer.

The Missouri and Illinois Bridge & Belt Railroad Company has a draw bridge across the Mississippi River at Alton, 15 miles north of the Merchants Bridge by air line, 18 to 20 miles by rail.

This bridge is owned by eleven companies, as follows:

Wabash.

St. Louis-San Francisco.

Missouri Pacific.

Cleveland, Cincinnati, Chicago & St. Louis.

Louisville & Nashville.

Pennsylvania.

Chicago, Rock Island & Pacific.

Southern.

Missouri, Kansas & Texas.

Baltimore & Ohio.

Chicago, Peoria & St. Louis.

In the past there were several very busy ferries for street traffic and for freight cars.

All car ferries within the St. Louis city limits have been abandoned. The last was operated by the Wiggins Ferry Co. which now handles all its trans-river freight across the Merchants Bridge.

There are highway ferries, at Davis street, and Sidney street, South St. Louis and the Wiggins Ferry at Valentine street, near the south end of the central business district. The latter is used principally for drays handling l. c. l. freight across the river.

Merchants Bridge

The Merchants Bridge is a single deck double-track steam railroad bridge built about 1890, has a total length of 4,550 feet, west approach grade 1.5 per cent, east approach grade 1.2 per cent. The floor was reinforced several years ago to strengthen the bridge which now corresponds in design capacity to about Cooper's E-41 loading, but there are practically no restrictions to ordinary equipment.

This is the principal crossing for Trans-Mississippi freight at St. Louis, for which it is admirably located. It is also used by fifty passenger trains per day, which materially restricts its freight handling capacity.

Both ends have "Y" connections with yards, switching tracks and belt lines of the Terminal

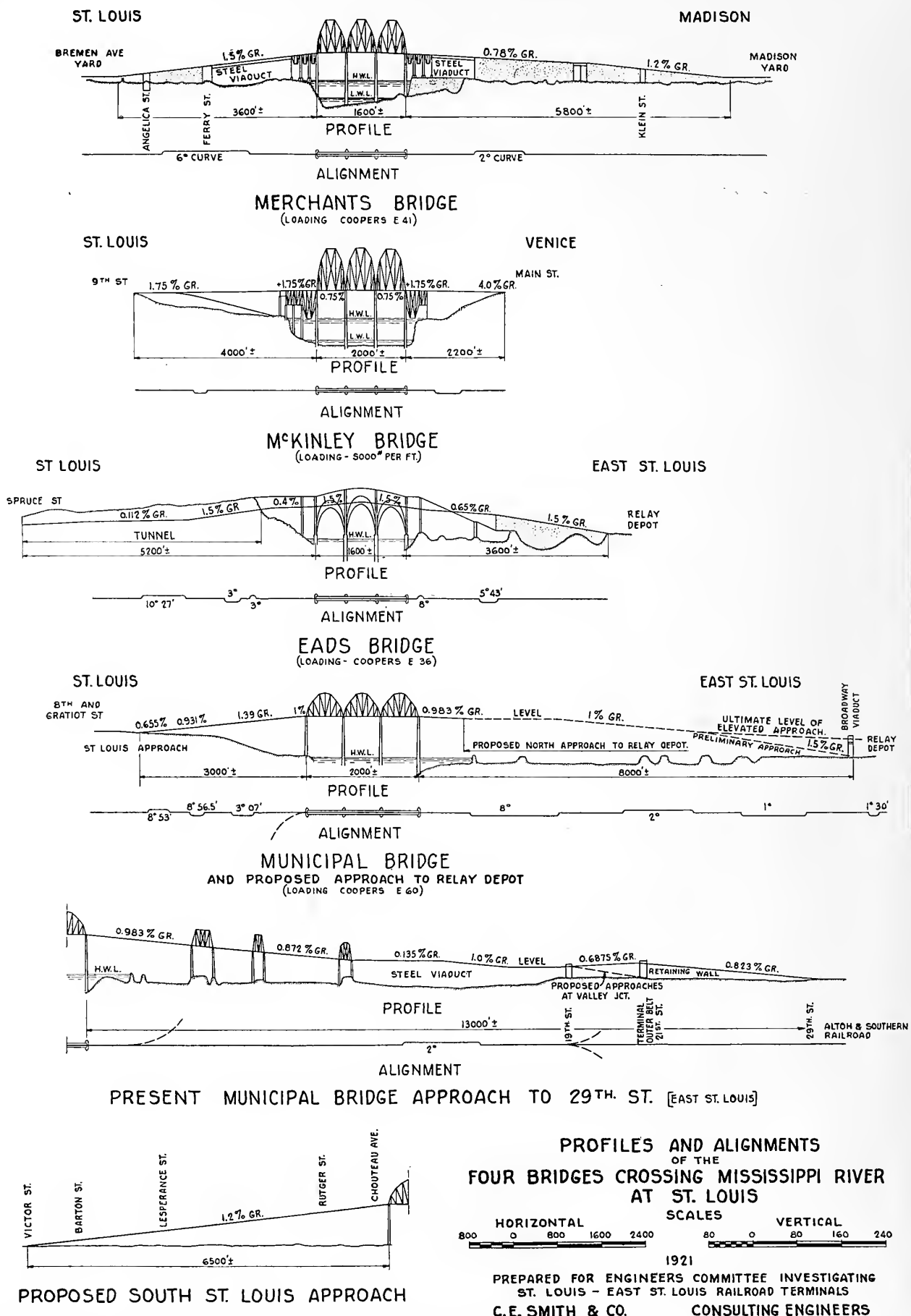


Fig. 7—Profiles and Alignments of the Four Bridges Crossing River at St. Louis.

Railroad Association of St. Louis and other railroads. During October, 1920, nearly 50,000 carloads of freight and 26,000 empty freight cars were handled over this bridge, in addition to about 1,500 passenger trains.

With the present heavy locomotives, trains of 1,800 tons are handled over this bridge. There is practically no limit to the tonnage that can be handled in ordinary operating practice, as trains are frequently helped up the inclined approaches by pusher engines.

No additional connections are considered necessary for the Merchants Bridge. However, its capacity for handling freight cars can be greatly increased by decreasing the number of passenger trains using this bridge, which can be done by transferring most of the passenger trains to the Municipal Bridge.

As traffic continues to increase over the Merchants Bridge, it will be needed more and more for the movement of local freight in and out of the rapidly growing industrial districts convenient to this bridge. At some time in the future, in addition to the relief that may be offered by the McKinley Bridge and the Alton Bridge, another bridge will be required, primarily for the transfer of through freight cars. It should be located above the Merchants Bridge about in line with the proposed outer belt near the north limits of St. Louis.

McKinley Bridge

The McKinley Bridge is a single deck bridge with double electric railway tracks between the main trusses. Highway roadways, separate from the electric tracks, are supported on cantilevers outside the main river trusses at the same level as the tracks; on the west approach the north roadway crosses the bridge tracks at grade and merges with the south roadway.

It was built about 1910, has a total length of about 8,000 feet, approach grade at west end 1.75 per cent, approach grade at east end 1.75 per cent on a permanent portion of the approach and 4 per cent on a temporary approach connecting with the street surface in Venice, Illinois.

The McKinley Bridge was designed for coal trains weighing 5,000 pounds per lineal foot on

each track and 1,000 pounds per lineal foot on each highway roadway, but was not designed for locomotives weighing more than 5,000 lbs. per lineal foot.

The McKinley Bridge is used primarily for local electric street railway cars and interurban cars of the Illinois Traction System, which operates 450 miles of interurban electric railway tracks in Illinois, and for highway traffic. It is also used by cars hauled by electric motors, handling l. c. l. freight or express in and out of the McKinley freight station on Twelfth street near Washington avenue, and coal between Illinois mines and consumers in St. Louis served by coal hoppers and team track on its own lines and through its connection with the Terminal Railroad Association.

The passenger movement over this bridge is quite heavy and is growing steadily. The l. c. l. freight is greater in volume than that handled by some of the steam lines. The coal traffic is very light compared to that over other railroads. The highway traffic, notwithstanding this is a toll bridge, is increasing rapidly with the growth of Granite City as an industrial district, having increased about one and one-half times during the last five years. The cantilever roadways are already inadequate for the volume of highway traffic and for the weight of modern motor trucks and the company has under consideration plans for their improvement.

At the west end of the bridge the electric railway tracks and the highway roadway reach the surface of St. Louis city streets at Ninth street which is used by the tracks.

In addition a switchback incline (grade 4 per cent) reaches the surface team tracks and freight yard of the Illinois Traction System, where connection and interchange are made with the lines of the Terminal Railroad Association.

At the east end of the bridge the tracks pass through the streets of Venice and connect with the Venice and Carondelet Belt of the Southern Railway, which is used very little at this point.

The complete plans of the McKinley Bridge contemplate a steel elevated approach about one mile long extending easterly from the present end of the permanent approach over all streets and railroad tracks to beyond the north end of

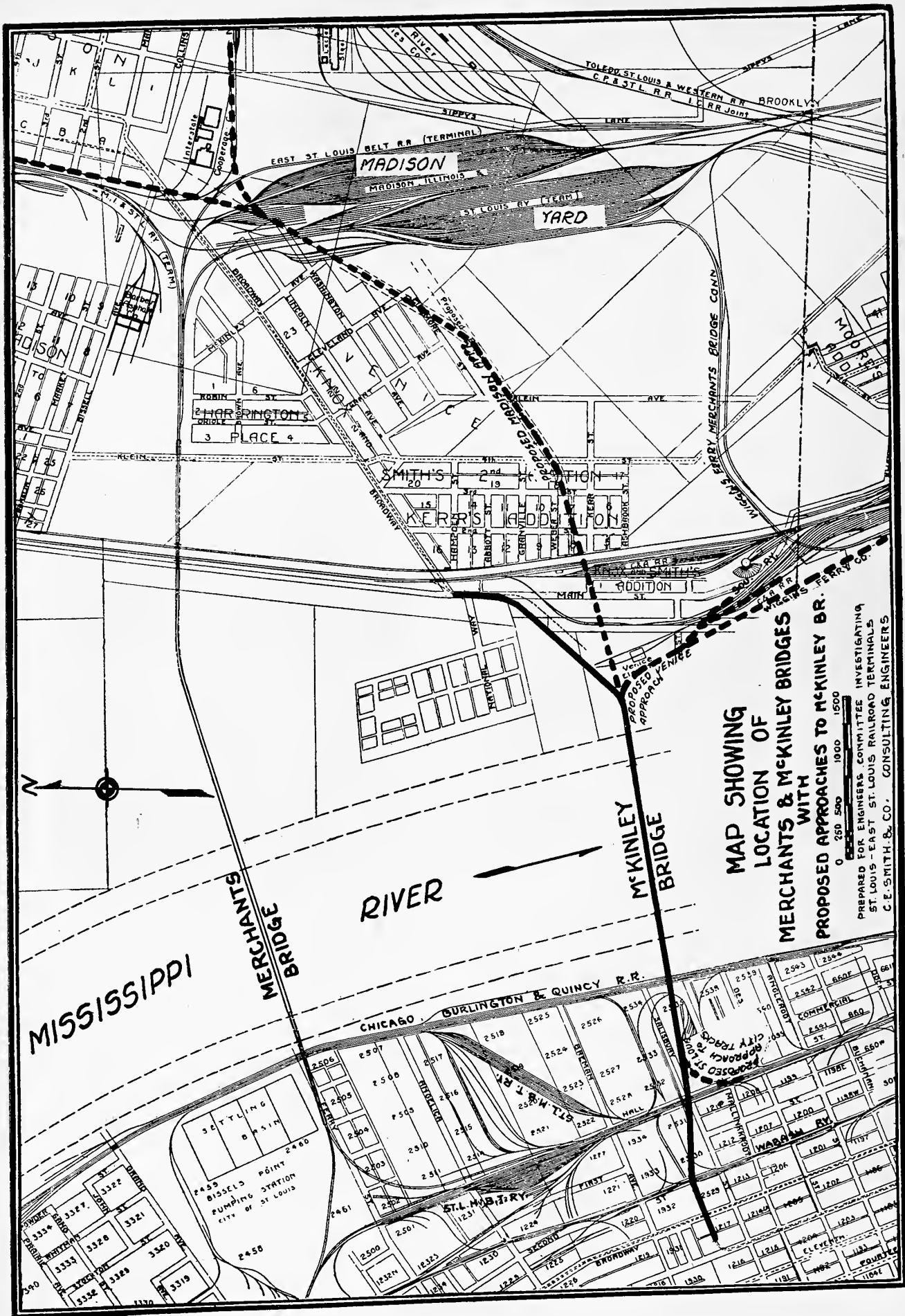


Fig. 8—Location of Merchants & McKinley Bridges.

the Madison Yard of the Terminal Railroad Association.

The connections of the McKinley Bridge and the grades of the freight approaches are not now such as to permit the handling of a heavy volume of freight. Even were the connections improved, the very short intervals between electric cars—which run a few minutes apart the entire day—and the large number of passengers

vide a convenient detour and relief route for Merchants Bridge traffic.

The additional connections that can be provided for this purpose are shown on illustrations accompanying this report, as follows:

(a) North and south connections between west end of bridge and surface tracks of Terminal Railroad Association and City of St. Louis in Hall street, St. Louis.



Fig. 9—West Entrance to McKinley Bridge, Ninth and Salisbury Streets.

that would be inconvenienced in case of delay, would seriously restrict the amount of freight that could be handled; the capacity of the bridge for handling freight cars, while many times the present freight car traffic over this bridge, would not be a very large proportion of the total freight.

However, the McKinley Bridge can be so connected that it will provide a very convenient route for a considerable number of freight cars, especially during night hours and during certain hours of the day when electric cars are not so frequent as during the busy periods of the day. This would not only increase the business of the Illinois Traction System, but would also pro-

(b) South connection at east end of bridge to surface tracks of Venice and Carondelet belt line of Southern Railway, and the Wiggins Ferry on the river front, through which connections would be established with all railroads in East St. Louis.

(c) Extension of east approach about one mile as originally contemplated to cross overhead north end of Madison Yard and connect with surface tracks north and east of Madison.

The Committee believes that the connections referred to should be built and that this bridge should be used for trans-river freight.

The communities on both sides of the river

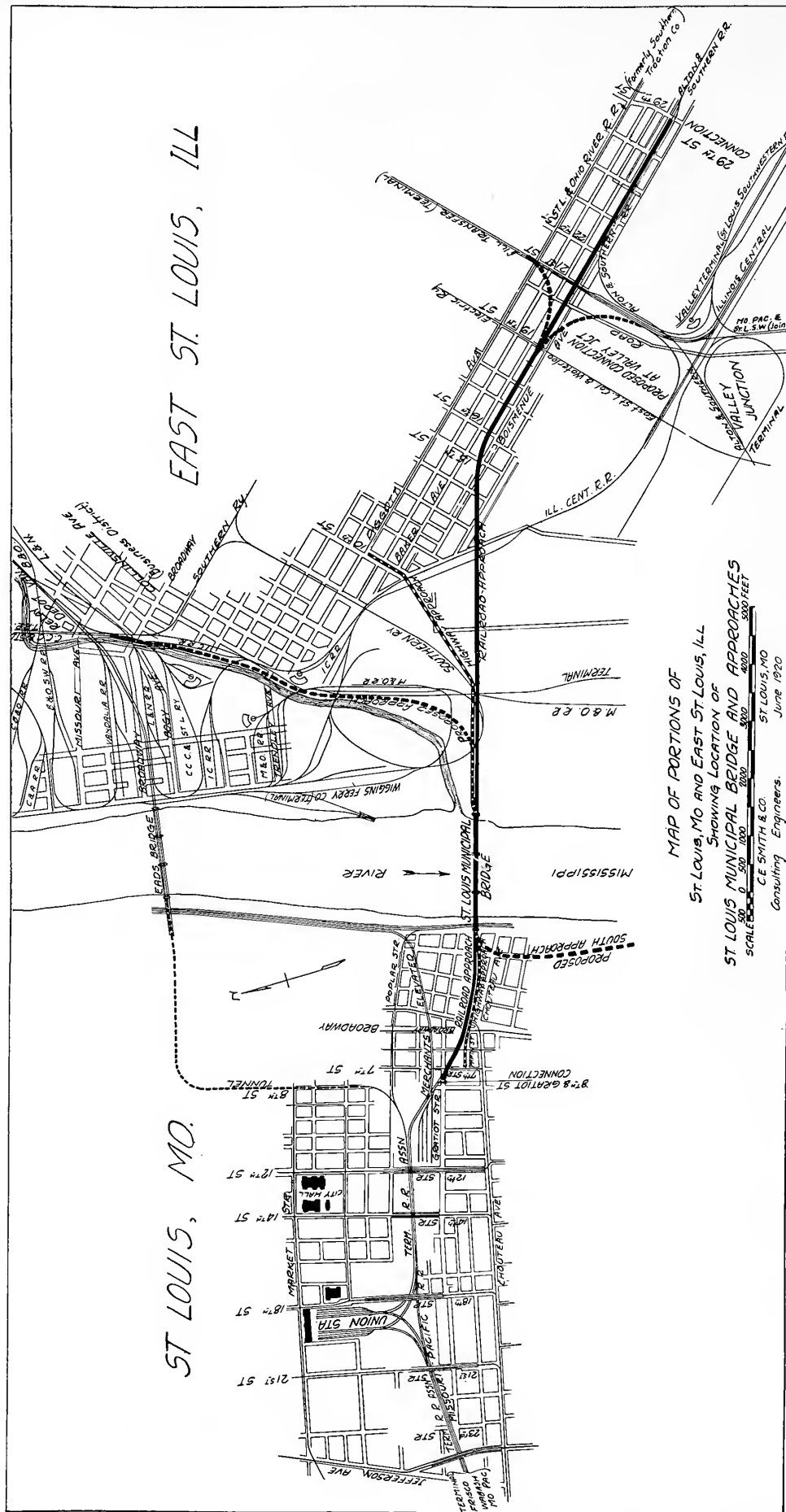


Fig. 10—Location of Eads and Municipal Bridges.

should negotiate with the owners of the McKinley Bridge for the elimination of tolls on the highway roadways.

Eads Bridge

The Eads Bridge is a double deck bridge with double steam railroad tracks on the lower deck and a toll highway roadway with double track street railway and sidewalks on the upper deck, has a total length of 4,885 feet, railroad approach grades 1.5 per cent, street approach grades 4 per cent. This bridge was started in 1867 and opened for traffic July 4, 1874. It has been strengthened several times and now corresponds in design capacity to Cooper's E-36 loading, although certain types of locomotives and cars exceeding that theoretical rating use the bridge with entire safety.

The capacity of the bridge is controlled by the floor system on which the weights of locomotives driving wheels are limited. This is the principal crossing for Trans-Mississippi passenger trains at St. Louis, of which nearly one hundred cross daily. In addition one-half as much freight is handled as over the Merchants Bridge. At East St. Louis it connects with tracks of several railroads and also with the switching lines and yard of the Terminal Railroad Association. The west end is connected by a tunnel one mile long with the railroad yards and Union Station in the Mill Creek Valley.

The insufficient height and width of the tunnel and the restricted carrying capacity of the bridge prevent the operation of many heavy locomotives, and large passenger and freight cars. There is a grade of 1.5 per cent in the tunnel against east-bound trains, which, together with the obnoxious gases from the soft coal of western Illinois, have resulted in an operating rule that not more than one train may be in the tunnel; the fact that the heaviest engines that can operate across the bridge cannot handle over 950 tons, and the further fact that the restricted clearances prevent super-elevation of a 12 degree curve in the tunnel for proper speed, further restrict the capacity of the bridge.

Needless to add, the tunnel is a most distressing, obnoxious and unsatisfactory route for passenger trains.

During October, 1920, over 26,000 carloads of

freight and 14,500 empty cars were handled across this bridge in addition to nearly 3,000 passenger trains. On account of the small freight tonnage per train (950 tons) many more freight trains were operated than would be required by way of the Merchants or Municipal bridges.

Since 1874 the upper deck has been the principal highway between St. Louis and East St. Louis and will continue to serve that purpose as the two other bridges that have highway traffic are considerable distances from the busiest centers of St. Louis and East St. Louis.

Nearly all the heavy draying of l. c. l. connecting line freight and l. c. l. St. Louis freight of east side railroads, amounting to about 2,500 tons per day, is handled on this roadway.

Although the total highway traffic across the Mississippi River has increased rapidly, especially since the opening of the McKinley and Municipal bridges, there has been very little increase in recent years across the Eads Bridge.

The extent to which the highway traffic across the river has been increasing is indicated by the increase of 150 per cent over the McKinley Bridge between 1915 and 1920, and by the fact that the opening of the highway deck of the Municipal Bridge resulted, in two years, in a volume of traffic practically equal to that over the Eads Bridge, without appreciably decreasing the Eads Bridge traffic, indicating an increase of approximately 100 per cent over the two bridges, compared with the previous traffic over the Eads Bridge. Undoubtedly a great deal of traffic that uses the McKinley Bridge and the Municipal Bridge would use the Eads Bridge if it were free from toll.

The street car tracks occupy the same roadway with other highway traffic. The East St. Louis and Suburban Railway Company operates a very heavy electric car traffic over this bridge to and from a stub end station with two tracks at the west end of the bridge at Third street and Washington avenue, St. Louis.

In order to accommodate the expected increase in traffic if tolls be removed from the Eads Bridge it would be most desirable and, in fact, practically necessary to remove the electric cars from the upper deck and put them on the railroad deck, which would not only largely

increase the capacity of the highway roadway for handling traffic, but would also expedite the passage of electric cars and interurban cars across the river. These cars handle, in round numbers, 10,000,000 to 12,000,000 passengers per annum, who get on and off the cars at the west end of the bridge.

Such a plan would necessitate removing all railroad passenger and freight trains from the Eads Bridge and tunnel, which, however, is most desirable and will be necessary in the near future for at least three other very important reasons, as follows:

1. The increasing weight and size of steam

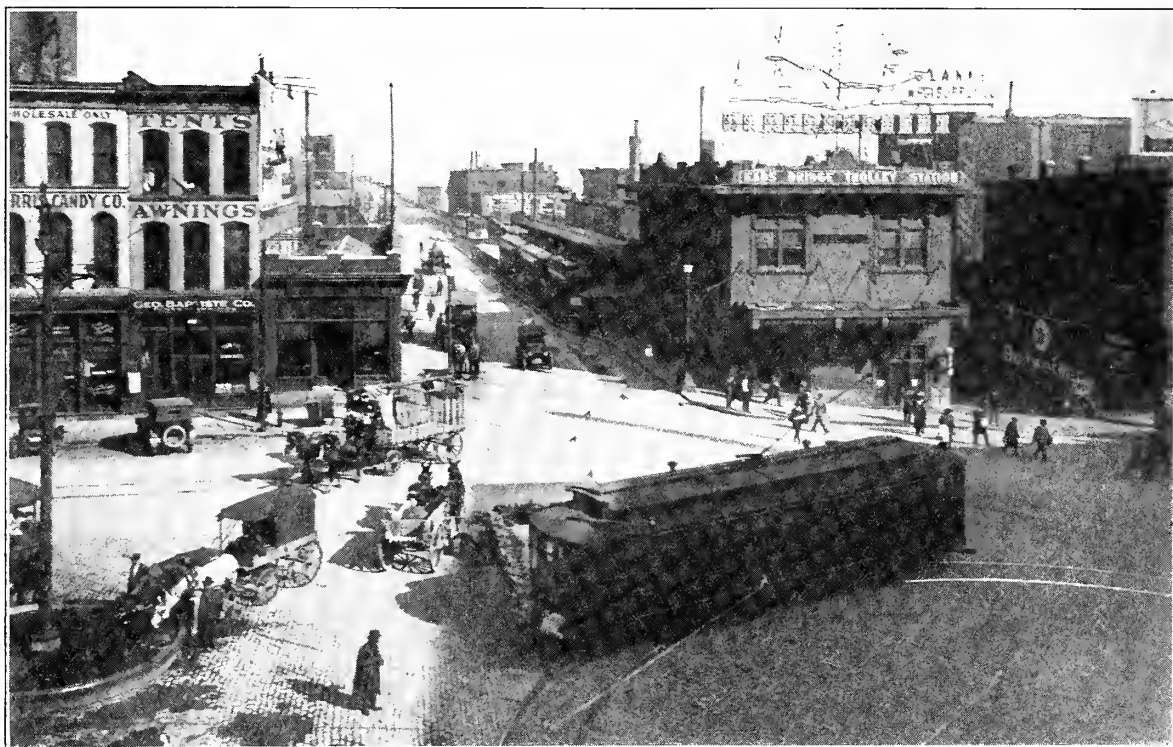


Fig. 11—West Entrance to Eads Bridge, Third Street and Washington Avenue.

On account of the interference with St. Louis street cars and other surface traffic in the vicinity of Third street and Washington avenue, it has not been considered feasible to have the East St. Louis street and interurban cars extend into St. Louis. They cannot operate on St. Louis street car tracks on account of different gauges. If they be placed on the lower deck of the Eads Bridge, their operation can be extended further west underground as far as may appear desirable.

An excellent site for a terminal for those lines is the "Market Block," owned by the City of St. Louis, bounded by Broadway, Lucas avenue, Sixth street and Morgan street, three blocks west and one block north of the present end of the Eads Bridge electric car tracks.

locomotives and passenger train cars render more and more burdensome to the railroads the weight, speed and clearance restrictions of the Eads Bridge.

2. The inconvenience and discomfort to the traveling public.

3. The continued use of the tunnel in Eighth street will very seriously interfere with the construction and operation of rapid transit facilities in St. Louis.

This Committee believes therefore that appropriate steps should be taken by St. Louis and East St. Louis to accomplish:

1. The abandonment of the Eads Bridge for railroad traffic.
2. The use of the upper roadway for highway traffic free from toll.

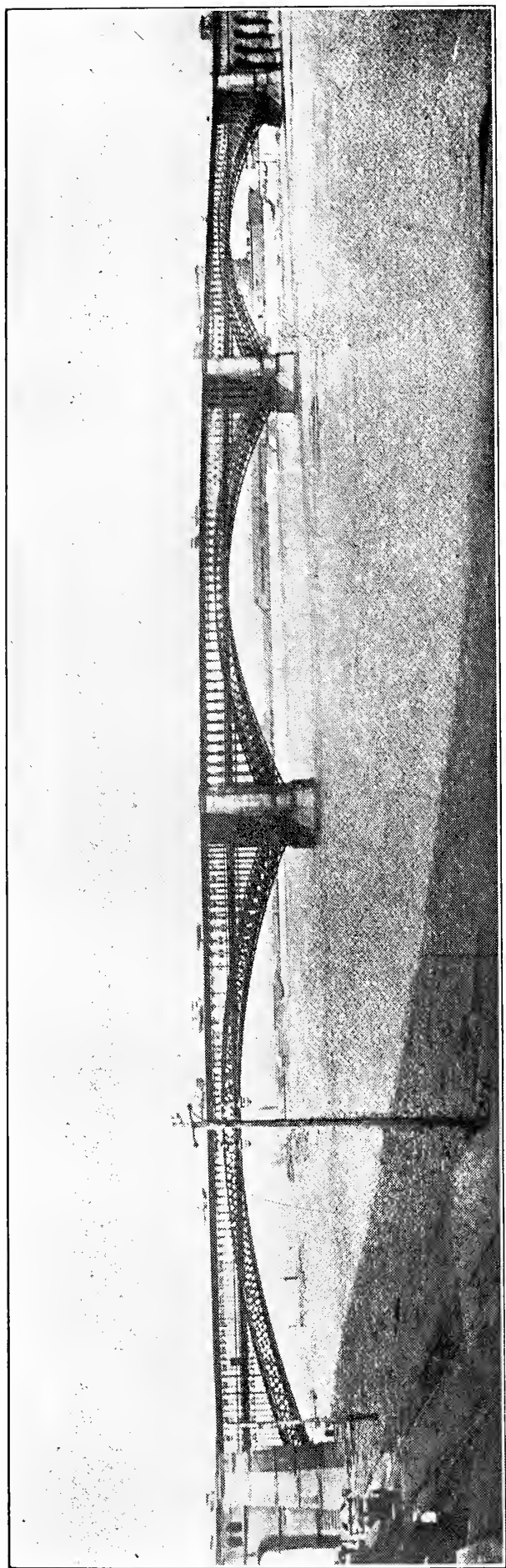


Fig. 12—Elevation of Eads Bridge

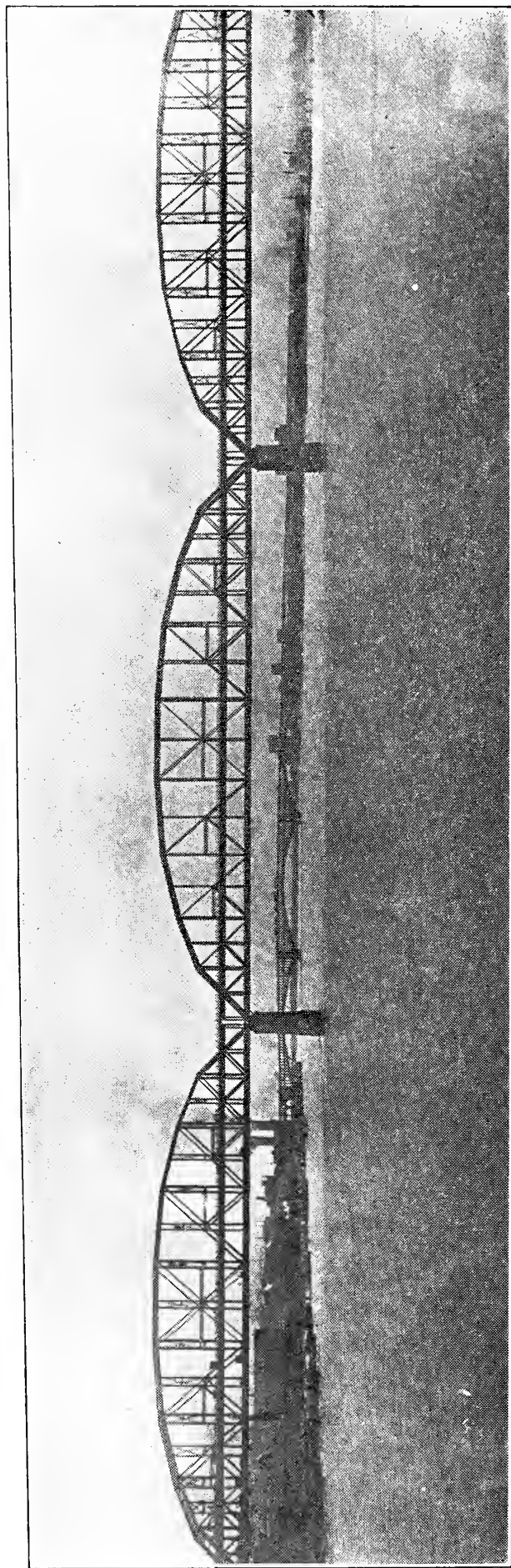


Fig. 13—Elevation of Municipal Bridge

3. The use of the present railroad tracks on the lower level for electric street and interurban cars.

Municipal Bridge

The Municipal Bridge was built by the City of St. Louis from 1910 to 1916. It is a double deck bridge with double steam railroad tracks on the lower level and a free highway roadway with double street railway tracks on the upper level.

The main spans extend 2,000 feet from river bank to river bank; the St. Louis approach is

ton and Southern railway belt line at Twenty-ninth street.

West of Twenty-ninth street the right of way of the Municipal Bridge approach lies between rights of way of the Alton and Southern, which has tracks on both sides immediately adjacent and parallel to the bridge approach; east of Twenty-ninth street the Alton and Southern owns and occupies the lands in direct line with the bridge approach, which enters between and stops at Alton and Southern property as in the space between the prongs of a fork.



Fig. 14—West Entrance to Municipal Bridge, Seventh Street Near Chouteau Avenue.

3,000 feet long; it reaches the surface near Eighth and Gratiot streets, adjacent to and level with the tracks of the St. Louis Merchants Bridge Terminal Railway Company at the west end of the elevated railway of that company.

The east approach is 13,330 feet long, crossing all railroads overhead to and including the Illinois Transfer Railway belt line of the Terminal Railroad Association, after crossing which overhead the approach tracks reach the surface and connect with the tracks of the Al-

The west approach grade compensated is about 1.4 per cent; the east approach grade is 1 per cent. The bridge was designed for Cooper's E-60 loading on each railroad track and for the heaviest interurban cars and street traffic.

This bridge has been completed for highway traffic and ready for service for five years, during which period the highway traffic has reached practically the same volume as over the Eads Bridge, without, however, materially reducing

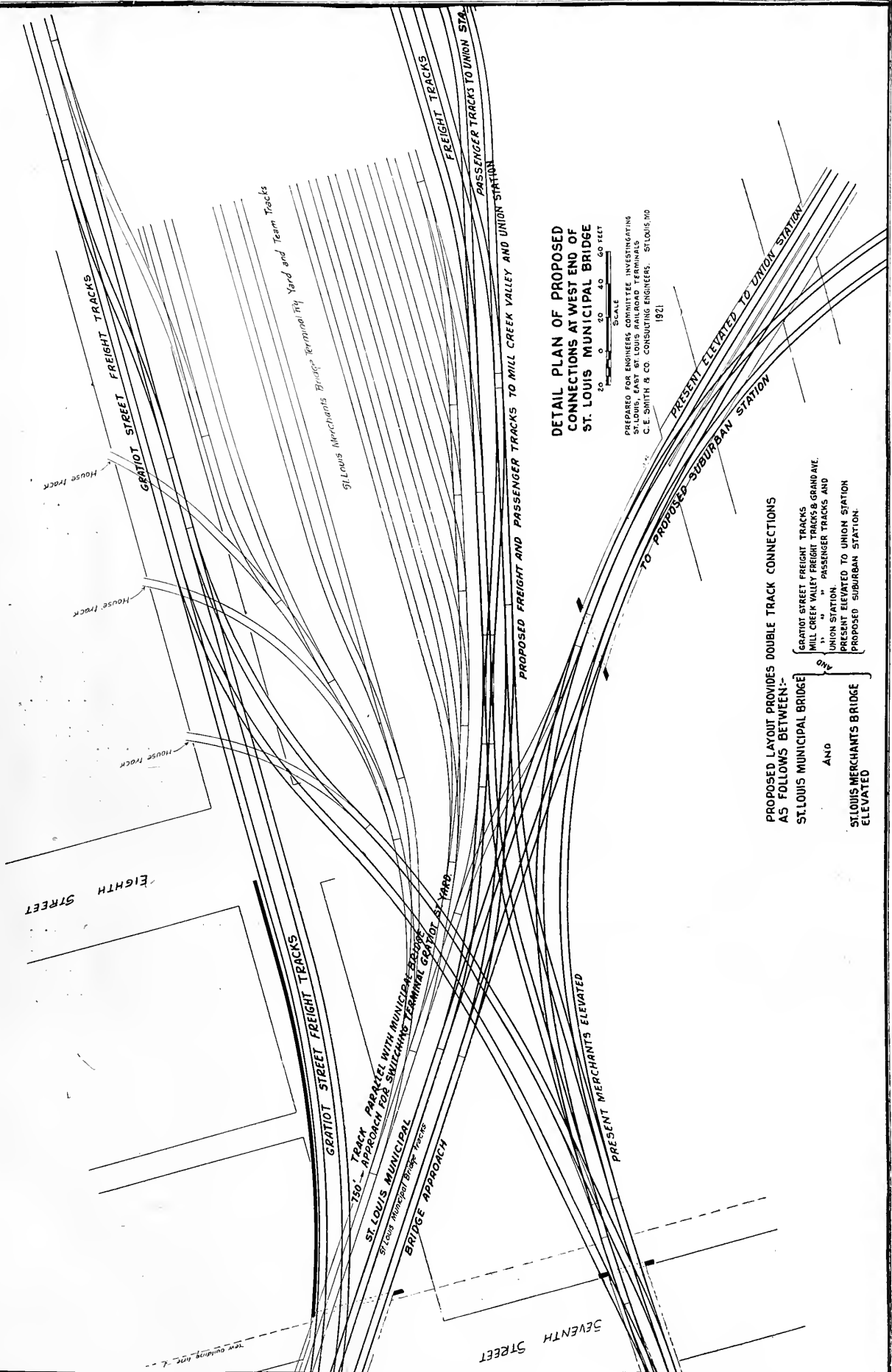


Fig. 15—Proposed Connections at West End of Municipal Bridge.

the traffic over the latter. The roadway of the Municipal Bridge is free from toll.

The street car tracks, which occupy the paved roadway, have not yet been used.

The steam railroad tracks have not yet been used in regular service. Although the rails are connected at both ends the tracks on the bridge cannot now be reached without using the Alton and Southern at the east end and the Terminal Railroad Association at the west end.

During Federal control of the railroads the ends were connected by the United States Railroad Administration and partly co-ordinated with the Alton and Southern tracks at Twentieth street, East St. Louis, and with the Terminal tracks near Eighth and Gratiot streets, St. Louis. Since that time two tracks on the east approach have been used by the Alton and Southern for storage and one track on the west approach has been used by the Terminal Railroad Association as a drill track for switching. While there are physical connections at both ends of the bridge no arrangements have been made as to their permanency.

The Municipal Bridge has not yet been so thoroughly co-ordinated into the general railroad situation by adequate connections as to permit its extensive use by railroad trains. In order to permit this bridge to be adequately used the two present connections must be made permanent and at least four additional connections must be built, as follows:

(a) South approach in St. Louis, extending from west end of main river spans, southerly along the river front to connections with the Missouri Pacific, the Manufacturers' Railway, and the tracks of the City of St. Louis now used by the Terminal Railroad Association.

(b) North and south connections near the east end of the east approach, with the Illinois Transfer Railway belt line of the Terminal Railroad Association, and the Missouri Pacific, St. Louis-Southwestern, Illinois Central, and Alton and Southern, just north of Valley Junction, where the Municipal Bridge approach crosses overhead the Illinois Transfer Railway belt line.

(c) North approach on the east side of the river, from the east end of the main river spans northerly to the present track level under the

Broadway viaduct near the east end of the Eads Bridge approach, near Relay Depot, this approach being a part of Plan E for rerouting passenger trains.

In the past there has been frequent mention of a proposed north connection in St. Louis to connect with the Merchants elevated on the river front. Such a connection would extend as far north as the Eads Bridge, would require the destruction of a great deal of improved property, which, while old, is all occupied and active. The approach would be unduly expensive. The elevated railroad with which it would connect will always be a busy line that should not be further unnecessarily burdened. The North St. Louis railroad yards, freight houses and team tracks that could be reached by such a connection can be reached better by the Merchants Bridge. The Committee believes this approach is not necessary.

Illustrations accompanying this report show the location of the additional connections referred to. When so provided with additional connections, the Municipal Bridge will be in a position to handle a large amount of freight and all passenger trains that could be transferred from the Merchants and Eads bridges.

The studies made by the Committee indicate that if the Eads Bridge be abandoned for railroad trains and other improved operating methods be followed the movement across the Municipal Bridge on the basis of October, 1920, business would be:

Carloads of freight.....	20,000 per month
Empty freight cars.....	10,000 per month
Passenger trains.....	4,400 per month

In comparison with the October movement across the Eads Bridge of

Carloads of freight.....	26,000 per month
Empty freight cars.....	14,500 per month
Passenger trains.....	3,000 per month

There would be no restriction to the weight of passenger or freight engines or the tonnage of freight trains on the Municipal Bridge. On account of the decreased number of cars and increased train tonnage there would be only about one-third as many freight trains over the Municipal Bridge as at present over the Eads Bridge.

Further descriptive details, legal and corpo-

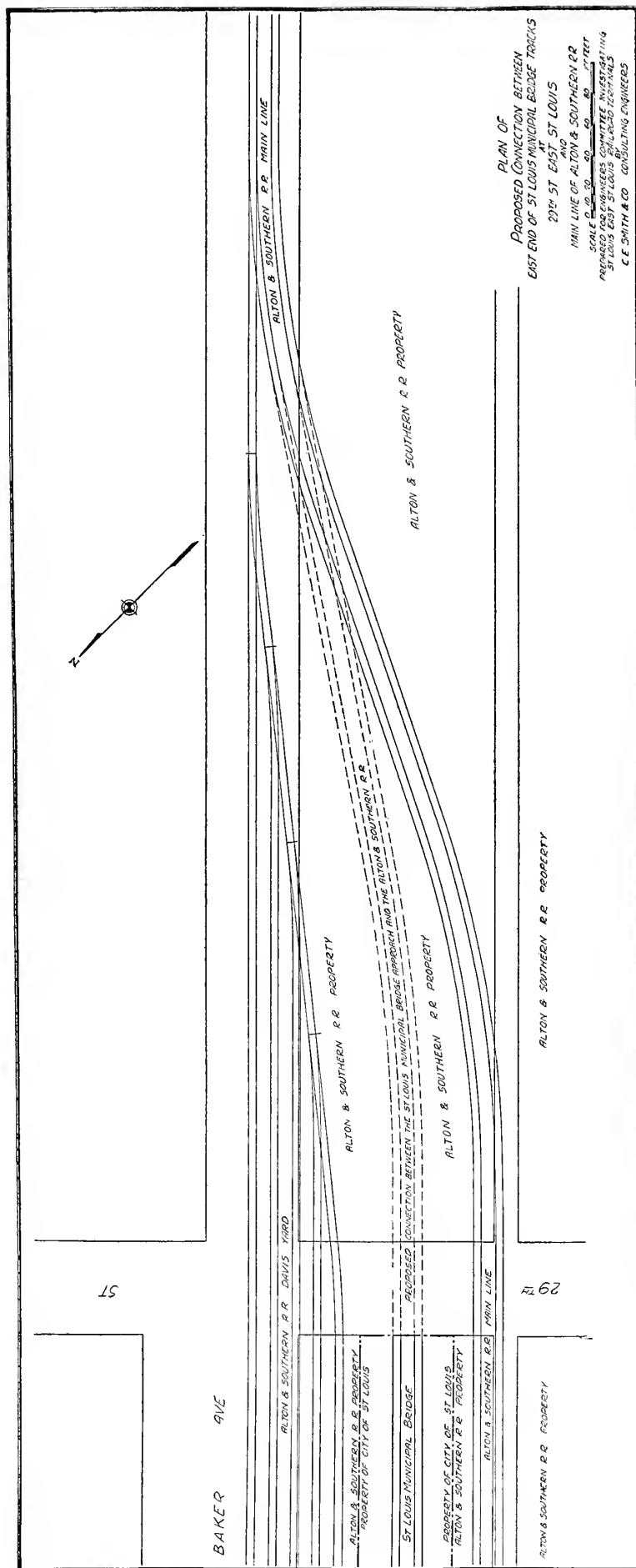


Fig. 16—Proposed Connection with Alton & Southern R. R. at East End of Municipal Bridge.

rate information, and pertinent extracts from laws and ordinances relating to the Municipal Bridge are given in Appendix "H".

The conclusion of the Committee is that so far as the physical conditions are concerned the Municipal Bridge can be made available for the passenger and freight business that should be diverted from the Merchants and Eads bridges.

Exchange of Uses—Municipal and Eads Bridges

The Committee recommends that the cities of St. Louis and East St. Louis negotiate with the railroads for an exchange of uses of the Eads and Municipal bridges that will result in the following:

(a) Upper decks of both bridges to be used for highway traffic free of toll.

(b) Lower deck of Municipal Bridge to be used for steam railroad traffic of any and all railroads.

(c) Lower deck of Eads Bridge to be used for street railway and interurban traffic.

(d) The Eads Bridge and tunnel to be abandoned for steam railroad service.

Ivory Transfer

The Ivory Transfer consists of a car ferry and double track inclines and yards on both sides of the river. The inclines are on 3 per cent grades extending from nearly high water to low water.

The operation of the ferry is seldom interfered with by high water as the tracks on the banks are above all ordinary high water stages and are interfered with only by extreme flood stages once in 10 or 20 years. The car ferry suspends an average of 60 days per year on account of ice and low water in winter, emergency repairs, etc.; sometimes the ice causes considerable damage to the floating equipment, inclines and cradles.

During normal operation this is a most effective and economical method of transferring cars across the river; the entire cycle of loading and unloading the ferry on both sides and crossing the river twice is usually accomplished in about one hour, the ferry having a capacity of 26 freight cars. During October,

1920, about 9,500 loaded and 5,500 empty freight cars were handled.

During suspensions, the conditions become serious. The Terminal Railroad Association having the other river crossing facilities is suddenly called upon to handle the cars. Frequently in past years the Terminal has been unable to handle all the cars, which resulted in embargoes on Missouri Pacific traffic. As the Terminal seldom had engines and crews available for this extra traffic, much of it has been handled by Missouri Pacific engines and crews, over the Merchants Bridge.

The distance between the Missouri Pacific yards on the two sides of the river via Terminal lines and the Merchants Bridge is about 25 miles in comparison with about three miles by ferry and rail.

The operating conditions, interferences and delays in the St. Louis-East St. Louis railroad terminals are well indicated by the fact that crews making this 25-mile trip have been tied up enroute by the working of the 16-hour law.

To provide a more dependable route than the car ferry, the Missouri Pacific has contemplated the construction of a bridge across the Mississippi River near the present transfer. This bridge will be required more and more as time goes on and when built will permit the diversion over it of much freight from the bridges nearer the congested portions of the terminals.

Alton Bridge

The Alton Bridge is a single deck railroad bridge carrying two railroad tracks. It is not elevated above the clearance heights of boats like the St. Louis bridges, but has a draw span. The bridge is 6,400 feet long, approach grades 0.6 per cent. It was built in 1892; designed for about E-25 loading, but will carry safely loads rated up to E-45.

By making light repairs and using this as a single track bridge it will carry the heaviest locomotives and cars.

The track which crosses the bridge extends about two miles west to a connection with the track used jointly by the C. B. & Q., and M. K. & T. in Missouri at West Alton; in Alton connections are made with the C. & A., C. P.

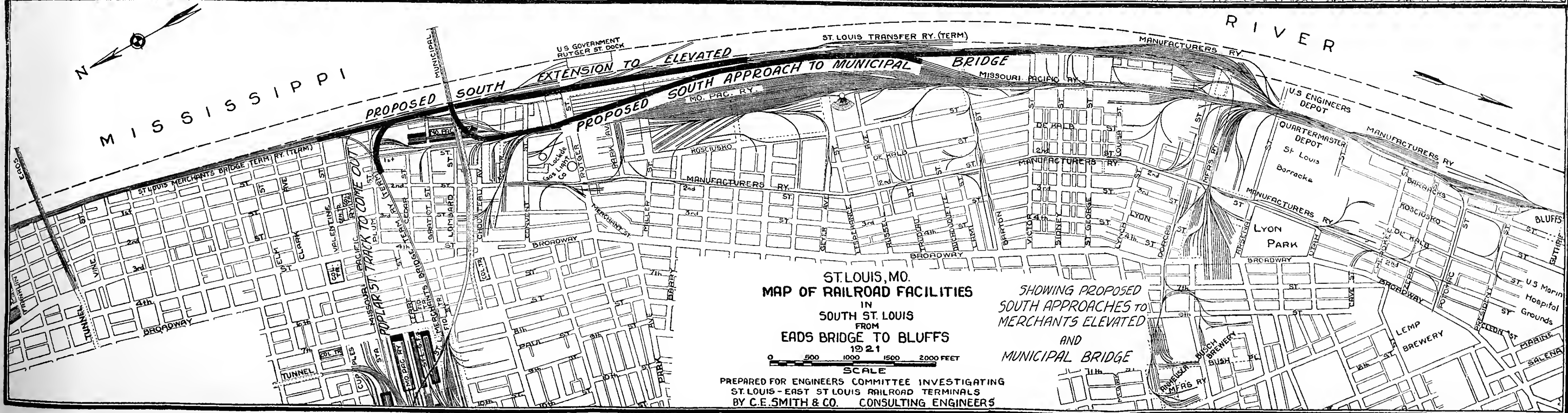
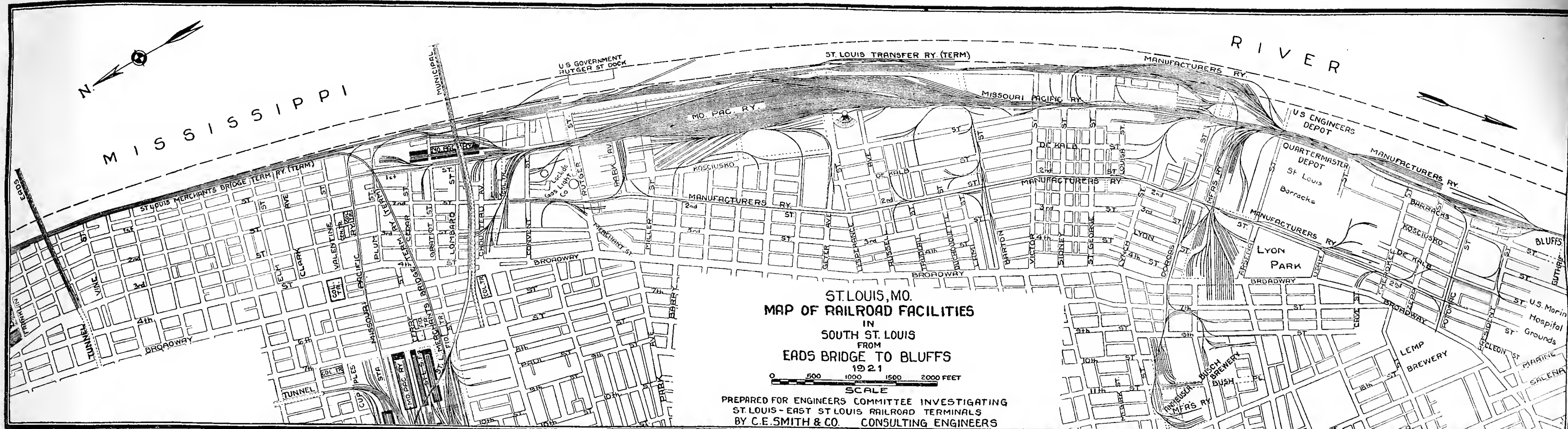


Fig. 17—Proposed South Approach to Municipal Bridge.



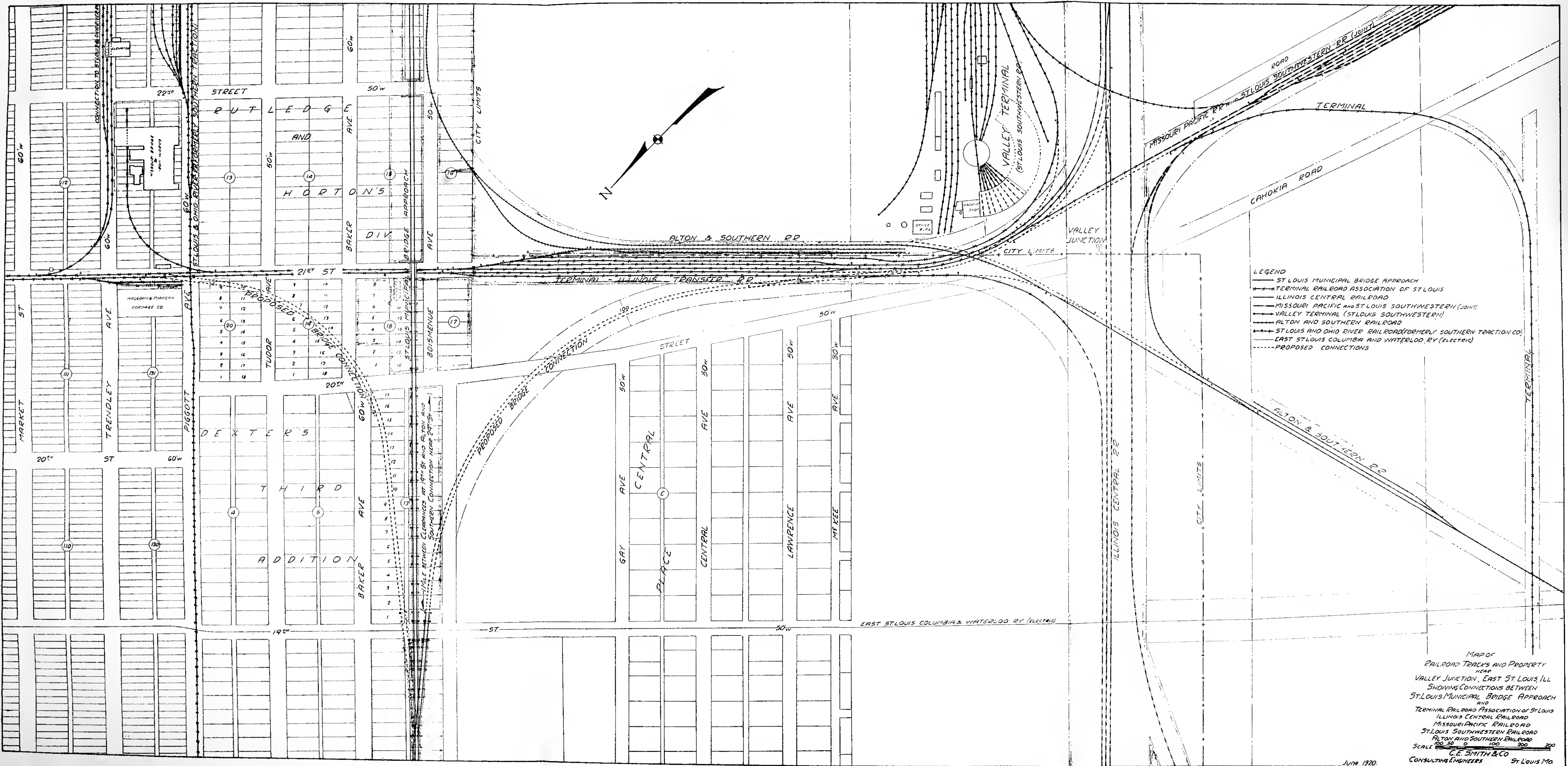


Fig. 18—Proposed Connections to Municipal Bridge at Valley Junction.

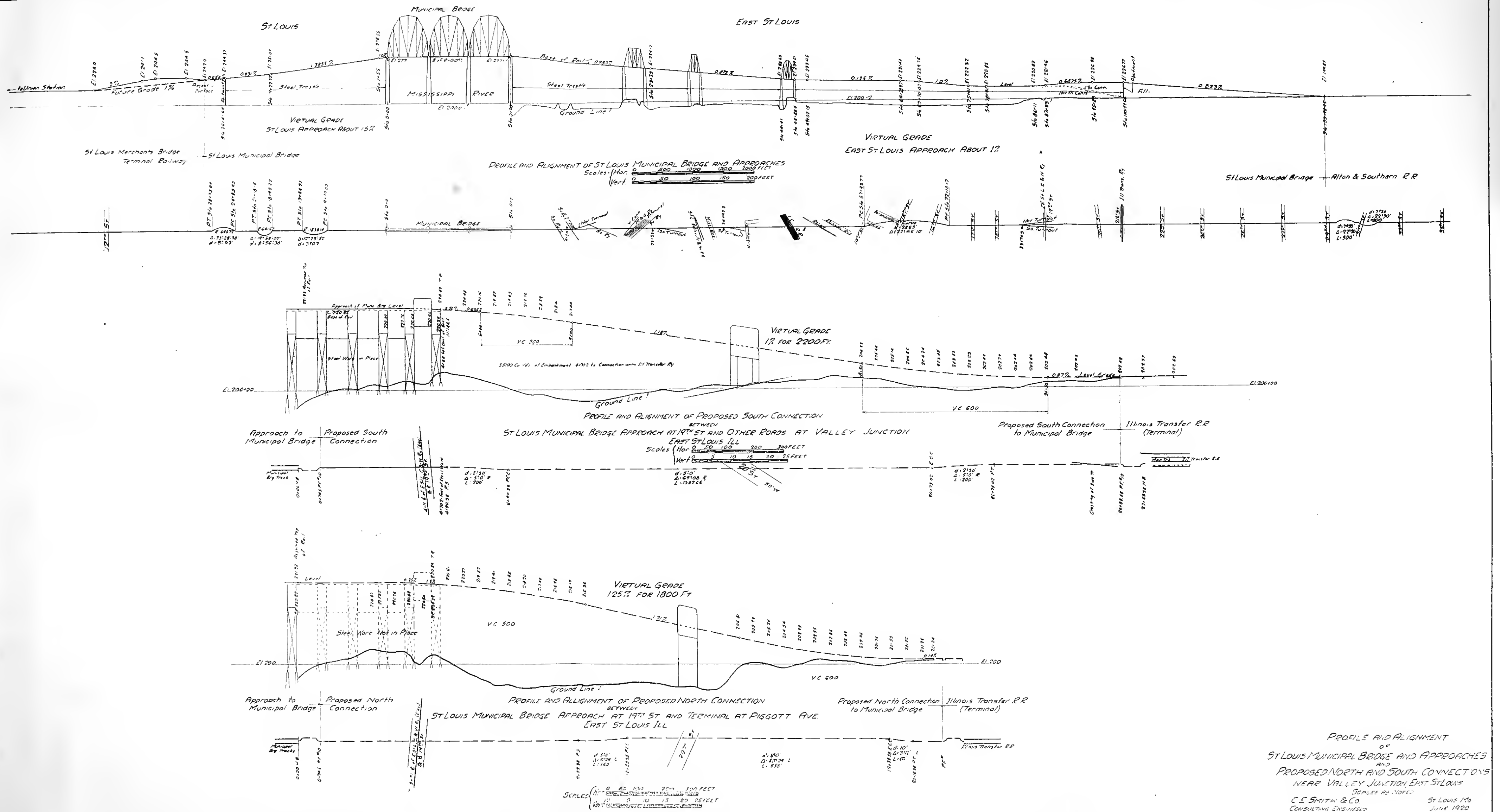


Fig. 19—Profiles of Connections to Municipal Bridge at Valley Junction.



& St. L., C. C. C. & St. L., and Illinois Terminal Railway. The bridge and tracks between Alton and West Alton are operated by the Missouri and Illinois Bridge & Belt Railway Company. The C. B. & Q. Railway has operating rights over it with its own engines and trains.

For all roads north of the B. & O., in Illinois, the Alton Bridge and the Illinois Terminal Railway offer a shorter connection with the C. B. & Q., and M. K. & T. at West Alton than by the St. Louis-East St. Louis terminals and the Merchants Bridge.

The C. B. & Q. Railroad makes the principal use of this bridge in transferring about 6,000 carloads per month between East St. Louis and its Missouri lines. In addition the C. B. & Q. uses it for transferring several hundred cars per month between its yards at North St. Louis and East St. Louis, a remarkable movement of about 40 miles to avoid the delay and expense that would be incurred if handled by the Terminal Railroad Association.

The relative distances between the C. B. & Q., and the M. K. & T. on the west side of the river at West Alton and various railroads on the east side of the river via Alton Bridge-Illinois Terminal Railway, and via St. Louis-East St. Louis terminals and Merchants Bridge, and the number of loaded freight cars transferred between those railroads across the Merchants Bridge in October, 1920, are as follows:

A portion of the interchange consisted of coal that originated between the Illinois Terminal Railway and East St. Louis for which the saving in mileage, if any, would be less than the relative distances shown on account of the back haul to reach the Illinois Terminal Railway.

If the Illinois Terminal Railway should be extended southerly through O'Fallon and Belleville to the Mississippi River, as has been proposed for many years, the relative distances between West Alton and lines from the B. & O. south would be as follows:

	Via East St. Louis and Merchants	Via Illinois Terminal and Alton
B. & O.....	33	33
C. B. & Q.....	33	33
St. L. & O'F.....	32	38
L. & N.....	32	38
E. St. L. & Sub.....	32	38
Sou.	32	40
I. C.-South.....	34	40
St. L. S. W.....	28	51
Mo. Pac.	28	51
M. & O.....	29	53

It will be noted that for the C. B. & Q. the distances are the same. The C., B. & Q. does not use the Illinois Terminal Railway except between Alton and East Alton but handles its Alton Bridge traffic through its East St. Louis yard.

For the northern lines on the east side the use of the Alton Bridge would make a considerable saving in car mileage and less congestion in St. Louis and East St. Louis. On the

East Roads	Distance to West Alton		Carloads to C. B. & Q and M. K. & T.		C. B. & Q. and Carloads from M. K. & T.	
	Via Merchants Br. Miles	Via Alton Br. Miles	Month	Aver. Per Day	Month	Aver. Per Day
C. P. & St. L.....	35	3	42	1	30	1
C. & A.....	35	3	88	3	115	4
C. & E. I.....	31	13	115	4	150	5
C. C. C. & St. L.....	31	13	170	6	302	10
Wabash	31	16	580	19	142	5
L. & M.....	31	18	20	1	0	0
T. St. L. & W.....	31	18	208	7	555	18
I. C.-N.	31	20	70	2	320	11
St. L., T. & E.....	33	22	300	10	0	0
Penn.	33	24	393	..	485	16
Total.....	—	—	1,986	66	2,099	70

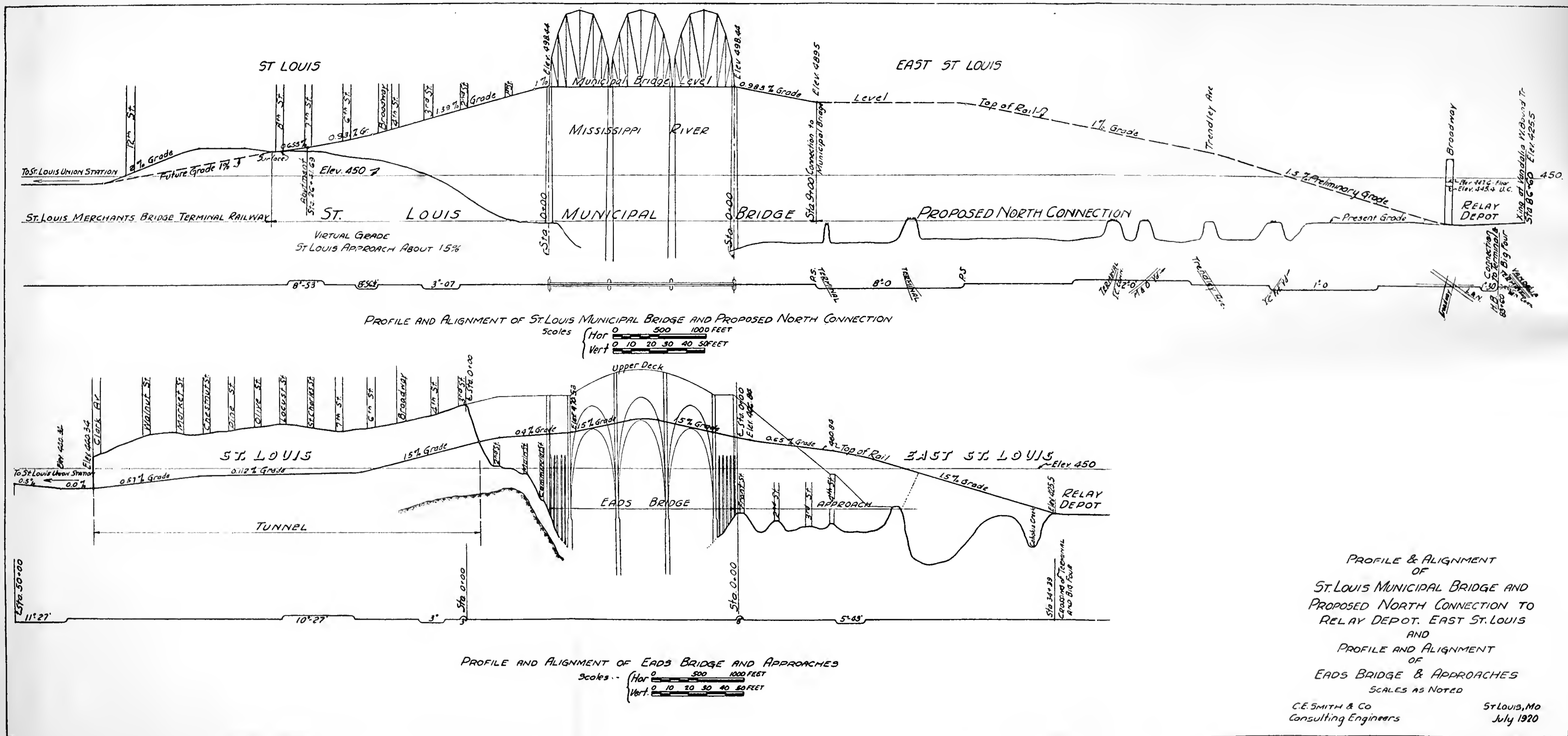


Fig. 21—Profiles and Alignments of Eads and Municipal Bridges.



other hand additional interchange and yard tracks would have to be provided at the junction points and road trains would have to set out and pick up cars at those points.

As it appears that the total number of cars that might be diverted over the Alton Bridge would be between 5 and 10 per cent of the total over the Merchants Bridge, the Commit-

tee has considered the whole number of cars retained over the Merchants Bridge, excepting, however, the Burlington movement for which no change is shown.

The information given above will enable the various roads to determine the extent to which savings, if any, might be effected by using the Alton Bridge.

PASSENGER TRAINS

Descriptive

All railroads operating passenger trains into and out of St. Louis, use a single Union Station, which is owned by the Terminal Railroad Association of St. Louis, which comprises fifteen proprietary companies. However, all railroads, whether proprietary companies or not, use the Union Station on exactly the same basis as to privileges, the cost of operating and maintaining the station being divided among owners and non-owners alike in proportion to the number of cars.

Number and Routes of Passenger Train

Eighteen railroad companies operate passenger trains in and out of the Union Station. The number of trains varies somewhat throughout the year, seasonal trains being added and taken off as necessity demands. A detail study of the December, 1920, time tables showed a total of 269 passenger trains each day. The names of the railroads and number of passenger trains operated by each were as follows:

TABLE III.
Number of Passenger Trains of Each Railroad.

Road	Trains Per Day
Baltimore & Ohio Railroad.....	10
Chicago & Alton Railroad	22
Chicago, Burlington & Quincy Railroad (East Side)	4
Chicago, Burlington & Quincy Railroad (West Side)	15
Chicago & Eastern Illinois Railroad.....	6
Chicago, Rock Island & Pacific Railway.....	4
Cleveland, Cincinnati, Chicago & St. Louis Railway	20
Illinois Central Railroad (North)	8
Illinois Central Railroad (South)	10
Louisville & Nashville Railroad	8
Missouri, Kansas & Texas Railway.....	8
Missouri Pacific Railroad-Western Lines	30
Missouri Pacific Railroad-Southern Lines, Missouri	13
Missouri Pacific Railroad-Southern Lines, Illinois	2
Mississippi River & Bonne Terre Railway.....	4
Mobile & Ohio Railroad.....	6
Pennsylvania Railroad.....	21
St. Louis-San Francisco Railway.....	34
St. Louis-Southwestern Railway	2
Southern Railway	6
Toledo, St. Louis & Western Railroad.....	4
Wabash Railway (West)	15
Wabash Railway (East)	17
Total.....	269

In addition, the Wabash Railway operates 10 suburban passenger trains per day in and out of St. Louis that do not use the Union Station, their terminus being an uncovered track on the river front, at the foot of Olive street.

The 269 passenger trains that use the Union Station may be subdivided as follows:

	Trains Per Day
Western entrance	103
Eads Bridge and tunnel.....	96
Merchants elevated.....	70

Of the latter, 23 trains that use the Merchants Elevated do not cross the Mississippi River, but use the Burlington and Katy lines on the west side. The remaining 47 trains, and also three Wabash trains that use the western entrance to the Union Station and circle the west side of the city for the purpose of reaching the Wabash Delmar Avenue Station in the residential district, making a total of 50 passenger trains in all, cross the Merchants Bridge.

On the east side of the river, the Southern lines, consisting of the Mobile & Ohio, Missouri Pacific, St. Louis-Southwestern, Illinois Central (south), Southern, and Louisville & Nashville, operate all their passenger trains over the Eads Bridge. The Baltimore & Ohio, and Pennsylvania operate 25 trains over the Eads Bridge, and 6 trains over the Merchants Bridge. This detour of about six extra miles over the Merchants Bridge is undertaken primarily to avoid the St. Louis tunnel.

The Toledo, St. Louis & Western operates all its trains across the Eads Bridge; the Illinois Central (north) operates 2 trains over the Merchants Bridge and 6 trains over the Eads Bridge; the Chicago & Alton, Chicago, Burlington & Quincy (east), Chicago & Eastern Illinois, Cleveland, Cincinnati, Chicago & St. Louis, and Wabash (east), operate 42 trains across the Merchants Bridge and 27 trains across the Eads Bridge. These trains are operated across Eads Bridge to a large extent to reach the East St. Louis Station.

Briefly stated, all east side lines from the south up to and including the Louisville & Nashville, use the Eads Bridge exclusively; the Baltimore & Ohio, Pennsylvania, Toledo, St. Louis & Western and Illinois Central

(north), use the Eads Bridge for all except 8 trains; and all northern lines operate approximately 60 per cent of their trains over the Merchants Bridge and 40 per cent over the Eads Bridge.

The Burlington and Katy trains on the west side of the river use the Burlington main line north of North Market street, St. Louis, and the Merchants Bridge Terminal tracks south of North Market street. The three Wabash (east) trains which use the Merchants Bridge and circle the city, together with the trains of the Wabash (west) and the Rock Island, use the Wabash main line through Forest Park and the west entrance of the depot. These trains, together with those of the Missouri Pacific, St. Louis-San Francisco, and Mississippi River & Bonne Terre, use a common double track passenger line, provided by the Terminal, between Grand avenue and the Union Station.

Of the trains using the west entrance, 69 are through and 34 are suburban. The latter, with the 10 Wabash trains previously referred to, are all the suburban trains in and out of St. Louis.

Prior to Federal control of the railroads, the Missouri Pacific, Frisco and Wabash each maintained a double track passenger line between Grand avenue and the Union Station in addition to which the Terminal maintained two tracks nearly the entire distance; thus eight tracks were set aside for passenger movements in a district where other railroad facilities are not adequate. During Federal control the tracks of the Terminal Railroad Association were extended to Grand avenue, the passenger trains of the three roads were transferred to the two Terminal tracks, and the six other tracks were released for exclusive freight use. There appears to be no intention of going back to the old wasteful practice. The present practice should be continued.

All things considered, there is very little to say about the routes of passenger trains that use the west entrance, which are about as direct as can be obtained. In any future rearrangement of tracks between Grand avenue and the Union Station, provision should be made for two more passenger tracks so there

will be available two tracks for through trains and two tracks for suburban trains.

Necessity for Rerouting East Side Passenger Trains

The 47 passenger trains that use the Merchants Bridge and the Merchants Bridge Elevated, run between the bridge and the elevated, a distance of three miles, on a double track railway, lined on both sides of its entire length by freight yards, industries, team tracks and local freight houses. For practically the entire distance the tracks occupy city streets which are crossed by other streets at grade every few hundred feet, and in addition are used by highway traffic longitudinally with the trains. In addition to being a most unsatisfactory route from a railroad standpoint, it is attended by considerable danger to pedestrians and street vehicles, and some danger to trains incident thereto.

Not only are passenger trains subjected to slow schedules through this route, but while it is being used for passenger trains, freight movements are very generally delayed as the main tracks must be cleared of such movements in anticipation of and during the passage of passenger trains. For the one and one-half miles from North Market street to the north end of the Merchants elevated, the 23 trains of the M. K. & T. and C. B. & Q. are subjected to the same conditions.

The 47 trains of the east side railroads can be removed from this congestion with a consequent improvement in other schedules by routing them via the Municipal Bridge as soon as the recommended exchange of the uses of the Eads and Municipal bridges has been effected. The 23 trains of the C. B. & Q. and M. K. & T. together with freight and switch movements between North St. Louis and the Mill Creek Valley can also be removed from this congestion by building an extension of the Merchants elevated north to and over North Market street and making connections north of that street with the C. B. & Q. and the Merchants Bridge Terminal Railway.

The 47 passenger trains of east side lines using the Merchants Bridge and elevated pass the Washington Avenue Station at the intersection of the Eads Bridge and the Merchants

elevated, but those trains do not make the East St. Louis Station.

The advantage of making the East St. Louis Station is recognized by the northern roads to the extent of sending 40 per cent of their passenger trains through Relay Depot and the Eads Bridge.

Since the building of the levee and drainage system of East St. Louis and its surroundings, that community has grown at a more rapid rate than St. Louis, and will undoubtedly continue to grow at a more rapid rate in future, which will make it more and more desirable for the 60 per cent of the northern trains that now use the Merchants Bridge to make the East St. Louis Station stop, as do all other east side trains.

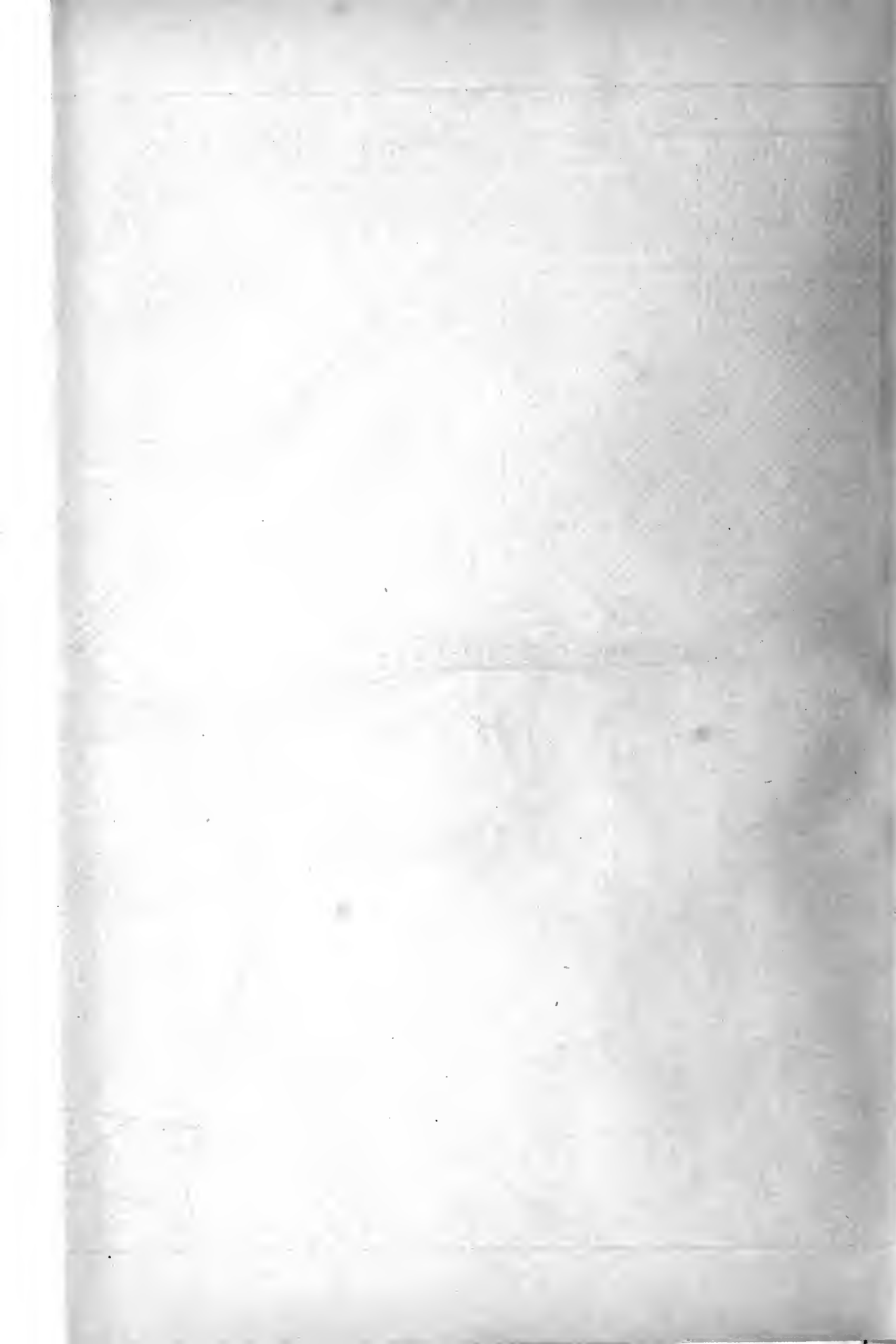
It should be unnecessary here to point out again the unsatisfactory entrance afforded by the Eads Bridge and the St. Louis tunnel. While a tunnel for passenger trains is objectionable at any point, it is particularly objectionable at St. Louis, where locomotives are forced, for most economical operation, to burn the most convenient coal, which is the very soft coal of western Illinois adjacent to East St. Louis.

The tunnel being of small bore, just sufficient to permit the operation of normal size locomotives and cars, and of insufficient size to permit the operation of the largest locomotives and cars, and the track in the tunnel for east-bound trains being on a 1.5 per cent grade, making it necessary that locomotives work going through the tunnel, the small space remaining around the train becomes thoroughly impregnated with coal gases and smoke, which, in spite of the best efforts at prevention, seeps into passenger coaches in a most disagreeable way.

Prior to the Louisiana Purchase Exposition in St. Louis, this condition was recognized in 1902 by the railroad executives, who consented to build a detour connection between the west end of the Eads Bridge and the Merchants elevated, in order that passenger trains using the Eads Bridge might avoid using the tunnel, and thereafter purchased right-of-way and steel for the connecting viaduct, which, however, was not built.



Fig. 22—Rerouting East Side Passenger Trains—Plan A.



The present congestion in and around Relay Depot, and the volume of passenger and freight traffic now using the Eads Bridge, together with the previously mentioned objection to the tunnel as a passenger route, make it inadvisable to detour via present surface tracks and the Eads Bridge, any appreciable number of the passenger trains now using the Merchants Bridge.

However, the St. Louis Municipal Bridge is available for the use of all east side railroad trains, and can be used instead of the Eads and Merchants bridges, if proper connections and approaches be provided.

Rerouting East Side Passenger Trains

In studying the rerouting of east side passenger trains to avoid the disadvantages that have been pointed out, five plans were suggested and discussed. Each of these plans contemplated the use of the Municipal Bridge by all trains except trains of the Wabash, which, in order to make the Delmar Station stop will continue to use the Merchants Bridge route. All but two of these plans were rejected as unpromising.

Plans "A" and "E" accompanying this report were found to be feasible and were given ex-

TABLE IV—TABLE SHOWING INCREASED AND DECREASED DISTANCES AND ANNUAL PASSENGER TRAIN MILEAGE.

PLAN "A" VIA ILLINOIS TRANSFER RAILWAY AND PRESENT EAST APPROACH OF MUNICIPAL BRIDGE.

TRAINS NOW USING EADS BRIDGE.

Roads	No. of Trains Weekly	Illinois Transfer Railway (Terminal Outer Belt)		Alternate Via A. & S. for East Lines.		Increased or Decreased Annual Train Mileage		Increased or Decreased Annual Train Mileage	
		Incr.	Decr.	Incr.	Decr.	Incr.	Decr.	Incr.	Decr.
B. & O.....	61	1.71	.....	5,434	.....	2.14	.....	6,788	.....
C. & A.....	82	3.64	.....	15,521	.....	.....	.....	.....	.....
C. B. & Q....	28	3.64	.....	5,300	.....	.....	.....	.....	.....
C. C. C. & St. L...	53	3.64	.....	10,030	.....	.....	.....	.....	.....
Ill. Cen. (North)....	42	3.88	.....	8,474	.....	.....	.....	.....	.....
Ill. Cen. (South)....	70	.....	1.67	.....	6,079	.....	.....	.....	.....
L. & N.....	56	0.47	.....	1,369	.....	1.15	.....	3,349	.....
M. & O.....	40	0.22	.....	458	.....	.....	.....	.....	.....
Mo. Pac.....	14	.....	3.65	.....	2,657	.....	.....	.....	.....
Penn.	109	1.74	.....	9,862	.....	2.18	.....	12,356	.....
Southern	42	.....	1.10	.....	2,402	.....	.....	.....	.....
St. L. S. W.....	14	.....	4.34	.....	3,159	.....	.....	.....	.....
T. St. L. & W.	28	3.88	.....	5,649	.....	.....	.....	.....	.....
Wabash	21	3.64	.....	3,975	.....	.....	.....	.....	.....
C. P. & St. L. ....	...	2.46	.....	.....	.....	.....	.....	.....	.....
Total annual difference	.....	.....	.....	66,072	14,297	.....	.....	22,493	.....

TRAINS NOW USING MERCHANTS BRIDGE.

B. & O.....	7	.....	3.85	.....	1,401	.....	.....	.....	.....
C. & A.....	68	3.22	.....	11,386	.....	.....	.....	.....	.....
C. C. C. & St. L...	82	3.22	.....	13,729	.....	.....	.....	.....	.....
C. & E. I.....	42	3.22	.....	7,032	.....	.....	.....	.....	.....
Ill. Cen. (North)...	14	2.47	.....	1,796	.....	.....	.....	.....	.....
Penn.	35	.....	3.85	.....	7,007	.....	3.42	.....	6,224
Wabash (East)....	77	3.22	.....	12,892	.....	.....	.....	.....	.....
C. P. & St. L.. ...	...	3.22	.....	.....	.....	.....	.....	.....	.....
Total annual difference	.....	.....	.....	46,835	8,408	.....	.....	.....	6,224
Grand total.....	.....	.....	.....	112,907	22,705	.....	.....	22,493	6,224

tensive analysis and study by this committee.

Plan "A" contemplated routing passenger trains via the Illinois Transfer Railway (East St. Louis outer belt of the Terminal Railroad Association) or the Alton and Southern and the present east approach of the Municipal Bridge.

Plan "E" contemplates routing passenger trains over present routes to the vicinity of Relay Depot (elevating the passenger tracks above the freight tracks in the vicinity of Bridge Junction and Relay Depot) and over a new approach to the Municipal Bridge.

The following are outstanding objections to Plan "A" which do not apply to Plan "E":

1. Ninety thousand miles of increased passenger train mileage per annum.
2. Impracticability of securing a Union Station in East St. Louis.
3. Undesirability of two separate stations.
4. Undesirability of the only available sites for such stations.

5. Outer belt line would become too congested.

6. Increased high speed train movements over many grade crossings.

The two plans were presented at a meeting attended by engineering representatives of all the interested railroads and the consensus of opinion was that Plan "A" should be eliminated from further consideration.

Plan "E" requires the construction of:

1. A connection between the east end of the river spans of the Municipal Bridge and the tracks of the railroads entering from the north, northeast, east and south. Such connection should be an elevated structure extending to and over Bridge Junction with four approaches connecting with a consolidation of the railroads entering from—

(a) The south, (b) the east, (c) the northeast, (d) the north.

The elevated connections for passenger train

TABLE V—TABLE SHOWING INCREASED AND DECREASED DISTANCES AND ANNUAL PASSENGER TRAIN MILEAGE.

PLAN "E" VIA NEW DEPOT NEAR BROADWAY, EAST ST. LOUIS, AND NEW APPROACH TO MUNICIPAL BRIDGE.

Roads	No. of Trains Weekly	Increased or Decreased Distances		Increased or Decreased Annual Train Mileage	
		Incr.	Decr.	Incr.	Decr.
TRAINS NOW USING EADS BRIDGE.					
B. & O.....	61	0.52	.....	1,649	.....
C. & A.....	82	0.46	.....	1,961	.....
C. B. & Q.....	28	0.46	.....	670	.....
C. C. C. & St. L.....	53	0.46	.....	1,268	.....
Ill. Cen. (North).....	42	0.47	.....	1,026	.....
Ill. Cen. (South).....	70	....	0.22	.....	801
L. & N.....	56	0.53	.....	1,543	.....
M. & O.....	40	....	0.095	.....	198
Mo. Pac.	14	....	2.22	.....	1,616
Penn.	109	0.56	.....	3,174	.....
Southern	42	....	0.28	.....	612
St. L. S. W.....	14	....	2.90	.....	2,111
T. St. L. & W.....	28	0.57	.....	830	.....
Wabash	21	0.46	.....	503	.....
C. P. & St. L.....	...	0.53	.....	.....	.....
Total annual difference.....				12,624	5,338
TRAINS NOW USING MERCHANTS BRIDGE.					
B. & O.....	7	....	5.05	.....	1,838
C. & A.....	68	0.05	.....	177	.....
C. C. C. & St. L.....	82	0.05	.....	213	.....
C. & E. I.....	42	0.05	.....	109	.....
Ill. Cen. (North).....	14	....	0.95	.....	692
Penn.	35	....	5.05	.....	9,191
Wabash (East).....	77	0.05	.....	200	.....
C. P. & St. L.....	...	1.30	.....	.....	.....
Total annual difference.....				699	11,721
Grand total.....				13,323	17,059

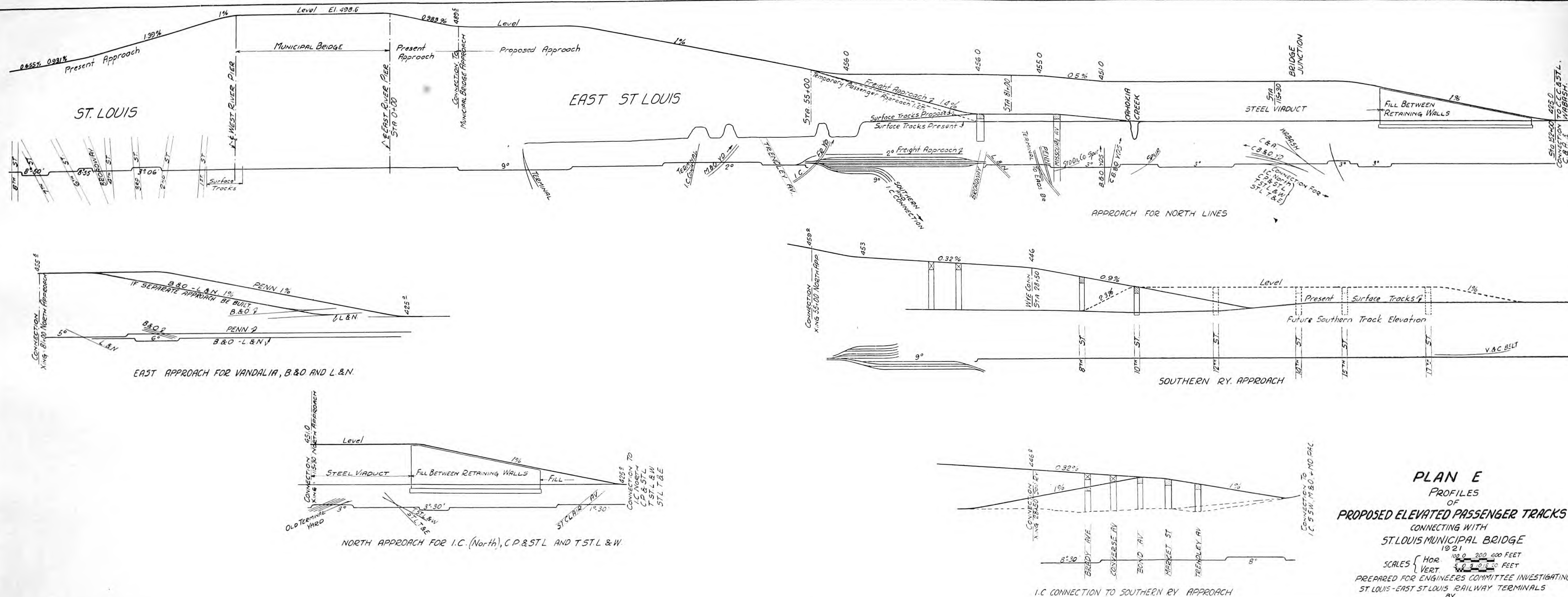


Fig. 24—Profiles—Proposed Elevated Passenger Tracks—Plan E.



movements would be carried over the tracks which serve the freight houses and industries in that territory, as far as the vicinity of, in the case of—

(a) Tenth street, (b) St. Clair avenue, (c) and (d) one-half mile north of Bridge Junction.

2. A freight connection on a suitable gradient from the vicinity of Relay Station to the proposed connection with the Municipal Bridge.

3. A suitable system of station tracks and a Union Station in the vicinity of Broadway and Main streets.

The proposed plan will permit all trains to make a head-on movement between East St. Louis and St. Louis Union Station, which is not the case at present.

Plan "E" cannot be carried out in full until the lower portion of Cahokia Creek be diverted and filled.

As a "first stage" in the development of Plan "E" the connection with the east end of the river spans of the Municipal Bridge can be brought to the ground on the line and gradient of the proposed freight connection mentioned as requirement (2), thereby entailing neither construction nor expense of consequence that will not be made use of as part of the ultimate plan. During the use of this connection for passenger trains it might be necessary to add a few station tracks at Relay Depot for the additional trains from the Merchants Bridge.

The Committee recommends that as Plan "E" furnishes the most practicable method for making use of the Municipal Bridge thus avoiding the undesirable features of the present routes, it be adopted as the plan for ultimate development, and that the "first stage" be undertaken as soon as arrangements for the use of the Municipal Bridge can be made.

Diagrams accompanying this report show by weighted widths of lines and notations the routes of passenger trains at present and via Plans "A" and "E".

Tables IV and V show comparisons of the distances and train miles via the present and proposed routes. Plan "A" shows an increase for certain roads of 112,907 and a decrease for certain roads of 22,705, a net increase of 90,205 train miles per year. Plan "E" shows an increase for certain roads of 13,323 and a decrease for

certain roads of 17,059, a net decrease of 3,736 train miles per year.

Suburban Service

The nearest approach to suburban service on the east side in Illinois is furnished by the Interurban lines of the Illinois Traction System, which uses the McKinley Bridge, and the East St. Louis & Suburban Railway System, and East St. Louis, Columbia & Waterloo Railway, which use the Eads Bridge, all of which give excellent service, but which will slow down as the communities develop.

The service over the Eads Bridge can be materially improved by removing the electric cars from the upper roadway and putting them on the lower level now used by railroad trains. An underground terminal can be provided for those cars in the Market block owned by the City, bounded by Broadway, Sixth street, Morgan street and Lucas avenue.

The Illinois Traction System now has an exceptionally well located station between Eleventh and Twelfth streets, one block north of Washington avenue, but the route between the station and the bridge is very bad and slow in and across busy city streets. As this service grows a faster route will be required and it is possible that the present site may be required entirely for the rapidly developing l. c. l. freight business of the company. An improved route for the passenger traffic can be had by locating the tracks in Ninth street as far south as Morgan street, thence in Morgan street to the City's Market Block; the tracks may be depressed in the streets or elevated on private right-of-way, as necessity requires.

Although the east side railroads have no suburban service, it is probable if a conveniently located suburban station be constructed downtown in St. Louis that suburban traffic will develop to take over some of the interurban traffic, especially as the latter is compelled to slow down as the communities through which the interurban lines pass build up. East St. Louis is surrounded by a rapidly developing industrial district which will undoubtedly require suburban service in the future.

On the west side, in Missouri, suburban development has extended along the railroad lines

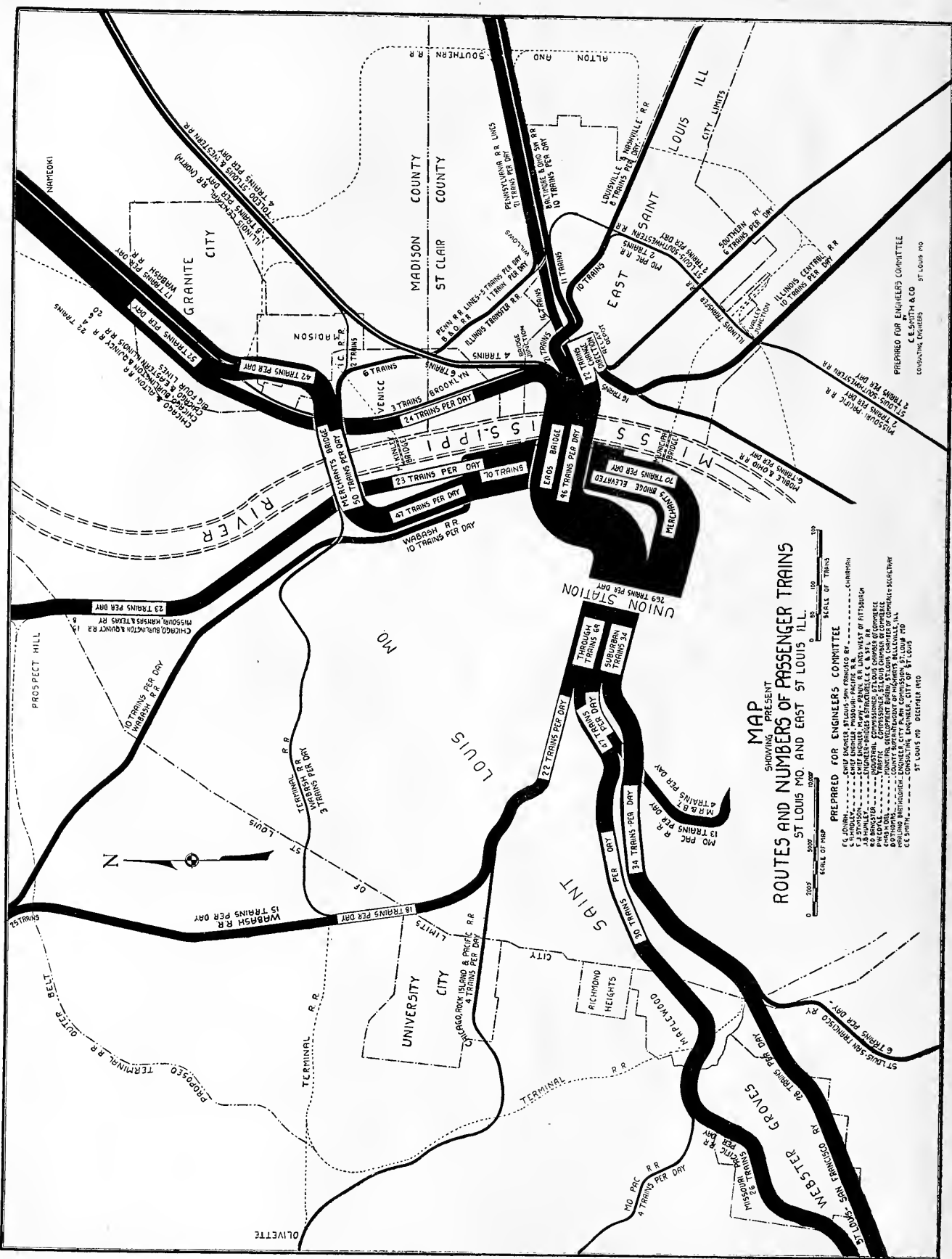
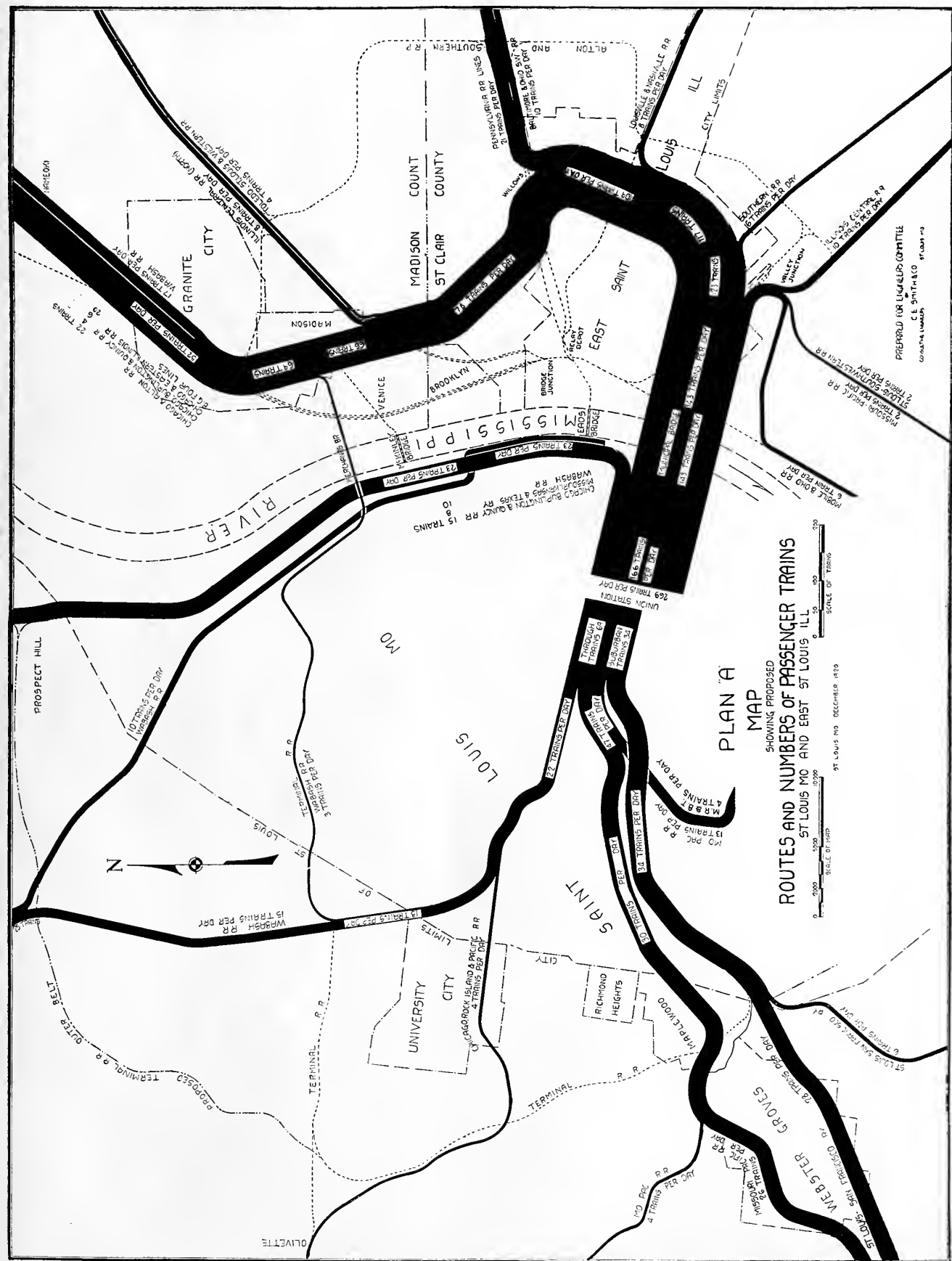
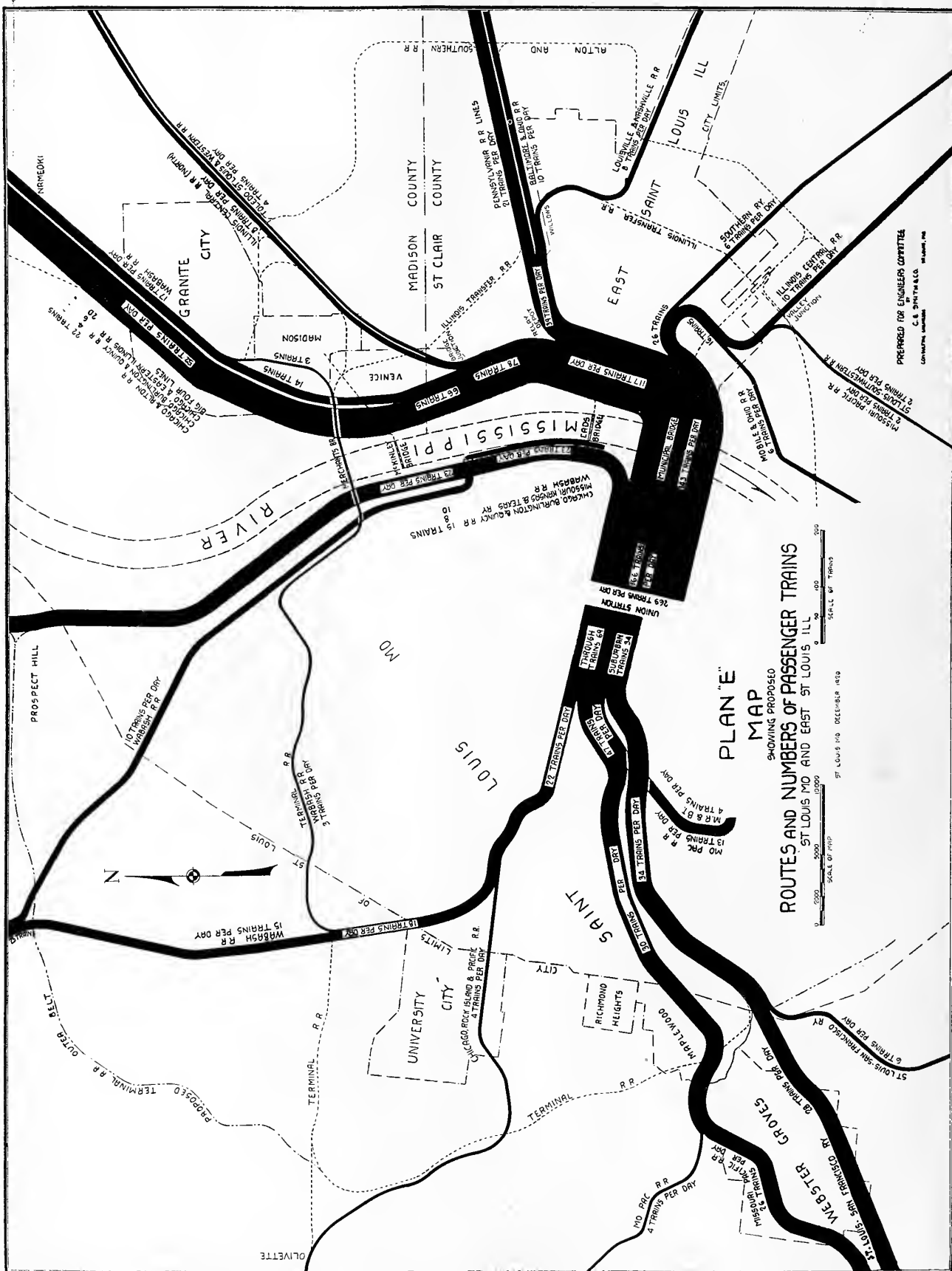


Fig. 25—Present Routes and Numbers of Passenger Trains.





which are admirably located to furnish suburban service. The suburban territory served by those lines is not well supplied by local transportation lines, as there are no interurban lines serving the suburbs on the west side of the river. The service afforded by the extensions that have been made to the city street railway system is slow and very unsatisfactory, on account of the great distances and amount of time.

Notwithstanding that, however, the development of suburban service has been slow, and has not kept pace with the growth of the suburban communities. This is largely due to the fact that the suburban trains that are operated (with the exception of the ten Wabash trains previously referred to), use the Union Station, about one mile from the business district.

If the suburban trains used a station closer to the destination of suburban travel, there would undoubtedly be a very considerable increase, as communities that now require one hour and longer by the street cars, could then be served in less than one-half the time by suburban trains.

It is probable that in time to come, those outlying districts may be adequately provided with rapid transit, but other communities more densely populated, and not served by the steam lines, must secure rapid transit first. Rapid transit for the suburban territory served by the steam lines seems to be a generation or more away, unless it be provided by the steam lines.

As the steam roads own rights-of-way of adequate width to accommodate the additional tracks that would be required for an intensive suburban service, as those tracks can be provided at a very small fraction of the cost of providing rapid transit subways and elevated lines, and as the railroads already have a good foundation in equipment, facilities and organization to

furnish such service, with comparatively little extra investment, it seems logical to conclude that the cheapest rapid transit that can be secured within a reasonable time is by an intensive development of the steam lines for suburban service. The only large fixed investment that would be required in the beginning would consist of a downtown suburban station.

The abandonment of the tunnel for through trains would permit its use for suburban trains as far north as Market street, without seriously interfering with rapid transit lines. A suburban station could be provided on one or both sides of Eighth street, possibly between Seventh and Ninth streets, facing Market street.

The Seventh, Eighth, Ninth, Market and Walnut streets and Clark avenue frontages could be retained for commercial development and development of air rights which would be very profitable.

For trains of railroads using the western entrance, main tracks for suburban trains should be set aside from the junction of the railroads at Grand avenue east to the suburban station.

Station platforms and stairs would be required at important cross town streets in order to co-ordinate the suburban service with the street railway system and to promote access to various parts of the city.

The suburban station could be developed entirely as a railroad station, but as that would involve fixed charges out of proportion to the amount of business, it would be more desirable to develop this station as a commercial enterprise in connection with the developments of air rights, the profits from which would probably carry the entire investment. The Committee believes that either the railroads or a private company would find such a development very profitable.

ST. LOUIS UNION STATION AND MILL CREEK VALLEY

Descriptive

The St. Louis Union Station is a beautiful work of architecture, the facade being grey cut granite, with rough face, the head house is 80 feet deep and 606 feet long, facing Market street to the north, and adjoining Eighteenth street on the east and Twentieth street on the west. The Midway is 60 feet wide, extending the entire length of the Station and opening on Eighteenth street and Twentieth street. Adjacent to the Midway are the stub ends of 32 passenger tracks, arranged in pairs between platforms. The platform tracks are 22 feet 3½ inches to 22 feet 10 inches center to center, which, deducting 10 feet for width of passenger car, leaves platform space not obstructed by supports, 12 feet 3½ inches to 12 feet 10 inches wide. The platforms are of wood plank construction. The track pairs are 12 foot centers, except where supports of the roof intervene. where the tracks are placed 14 feet center to center.

The tracks are approximately 775 feet long in the shed. All the tracks have clearances beyond the shed, half extending to a total clear length of 850 feet and half to 900 feet in length. Trains longer than 850 feet on the shorter tracks, and longer than 900 feet on the longer tracks, which alternate with fair regularity, extend beyond the clearance points and foul the leads of other tracks. The centers of the present three track junctions are approximately 1,150 feet from the ends of the stub tracks.

South of the junctions outside of the station, two 3-track leads swing east and west through approximately 90 degrees on 15 degree curves. The curvature through slip switches and cross-overs from track to track, however, is considerably sharper, reaching as high as 18 degrees in some instances.

The station was built in 1893. In 1903, in ad-

vance of the Louisiana Purchase Exposition, the tracks were lengthened, approaches enlarged and baggage and express facilities rebuilt. No important additions have been made since.

The St. Louis Union Station is one of the most beautiful and conveniently arranged union stations in the country. Numerous features of this station have been copied in the design of other stations, notably the Union Station at Washington, D. C., and the C. & N. W. Station in Chicago.

The Washington Station, the C. & N. W. Station at Chicago and many other stations have the decided disadvantage of having to handle mail, express and baggage at the same end of the platforms as the passengers. At those stations passengers must walk further than at St. Louis between their cars and the station and must pass the locomotives, and the mail, baggage and express cars while they are being loaded and unloaded, in addition to dodging motor trucks serving those cars. The backing in of trains at St. Louis while entailing delays of a few minutes to incoming trains avoids these disadvantages. There is no delay to outgoing trains.

The Committee believes that the slight delay to incoming trains is more than offset by the advantages resulting therefrom. Backing in has the further advantage of turning the engine and train as a whole thus avoiding the large amount of switching for this purpose that must be done at other terminals to rearrange trains and turn cars and engines.

There has been some criticism of St. Louis for having a single Union Station by critics who believe that two or more stations would be preferable in order that through passengers would be compelled to transfer through the streets between stations, see the city more effectively than from the trains or from the windows or entrance of a single station and

possibly remain over and spend more money at St. Louis than otherwise.

No doubt these results would follow, but the Committee feels that the inconvenience to the traveling public would be too great under such a system. The numerous stations in Chicago have always been a source of great inconvenience, to eliminate which railroads have grouped and further grouping in fewer passenger stations has been recommended by the Chicago Railway Terminal Commission.

There has also been some criticism of the location of the station and its surroundings. The present location is an outgrowth of the original location at Twelfth street as near as possible to the entrance to the tunnel. When that station was outgrown the next nearest location that would have adequate surroundings was chosen.

From the very first all railroads have developed their lines to reach the Mill Creek Valley with the shortest mileage and most direct routes until, by reason of topographic conditions and railroad and municipal development and improvements it is financially impracticable to move to another site. There is no other place in St. Louis where the various railroad lines can be brought together with as great convenience and facility and as low operating cost as at the present station. Present conditions practically fix this location.

Much of the objection to the location of the present Union Station relates to suburban service, as the station is about one mile from the center of the business district, requiring passengers either to ride the street cars, involving transfer in many cases, or to undertake about a twenty-minute walk.

The Committee believes that this situation should be improved by locating a suburban station closer to the business district.

The statement is frequently heard that the Union Station is outgrown and overburdened with traffic and for that reason a new station will soon be required. On the contrary the station is not used to anywhere near capacity as evidenced by comparison with the South Station in Boston; other comparisons might be made, but it is thought this comparison, with

the city most nearly equal in size to St. Louis, will suffice.

	No. of Tracks	Trains Per Day	Max. Trains One Hour
St. Louis Union Station.....	32	269	50
South Station, Boston.....	28	660	87

The South Station at Boston is a stub end station like St. Louis, but so arranged that road trains remain complete while unloading, and back out, making only two movements for each train, whereas on account of road engines cutting off and the trains being switched out or broken up by switch engines four and more movements per train are made at St. Louis. The throat of the South Station crosses a drawbridge over Fort Point Channel just outside the station, a busy navigable waterway, the drawbridge being opened many times each day.

The North Station in Boston handles over 420 trains per day on 23 tracks and is also subject to the interference of a drawbridge.

The number of passengers handled annually in the three stations referred to are as follows:

South Station, Boston.....	45,000,000
North Station, Boston.....	30,000,000
St. Louis Union Station	25,000,000

More passengers are now being handled through the St. Louis Union Station than during the World's Fair in 1904.

When studies were made in 1902 and 1903 for increasing the capacity of the Union Station, every effort was made to get longer station tracks, flatter curves and more approach tracks in the throat. The plan that was carried out was admittedly inadequate but it was the best that could be done in the time available.

The report of the work done in 1904 states: "The essential obstacle to adopting the true plan was the short distance from the south end of the train shed to the limit of the Company's property toward the south. Everything south was occupied by individual railroads regarded by them as absolutely indispensable.

"The time was very short. The plans had to be decided on without delay, and could not have the advantage which is gained by continuous study, and re-design when there is plenty of time in which to do it."

No enlargement of facilities has been made

since. In the meantime, however, the length of trains, weight and size of engines, and amount of mail and express have all increased; in addition the parcel post service has been inaugurated and has grown by leaps and bounds from 14,000,000 pounds in 1915 to 94,000,000 pounds in 1920, not counting that passing through.

It seems that the improvements made at that time have been outgrown in a number of details and that the next enlargement should provide for a long time to come.

TABLE VI—BUSINESS TRANSACTED AT ST. LOUIS UNION STATION.

	1905	1910	1915	1920
Passengers (official figures not available) about..	.....	.....	.....	25,000,000
Passenger Trains .....	.....	108,952	101,395	93,281
Passenger Train Cars.....	618,814	561,266	544,517	602,496
Baggage (pieces).....	2,209,037	1,829,839	1,509,275	1,831,132
Express (tons).....	62,173	66,623	92,618	183,420
Mail (not including Parcel Post)—				
Received (pounds).....	8,440,888	10,107,087	13,122,257	18,011,301
Dispatched (pounds).....	42,474,327	48,127,924	45,806,012	40,563,677
Passing Through.....	Cannot be obtained.			
Parcel Post—				
Received (pounds).....	2,260,491	2,535,621	4,251,172	41,290,994
Dispatched (pounds).....	1,883,116	1,849,427	10,274,827	53,299,045
Passing Through.....	Cannot be obtained.			

Inadequacy of Present Facilities

Although the Union Station as a whole is entirely satisfactory, it is deficient in many operating features, both from the standpoint of the railroads and the public. The following detail deficiencies may be pointed out:

(a) The surroundings are unsightly and the street and street railway approaches are inadequate.

(b) The balloon type shed is hot in summer, cold and damp in winter, smoky, dark and dirty.

(c) The Midway is too narrow.

(d) The platforms between tracks are too narrow.

(e) The station tracks are too short and the curves connecting the station tracks to the approach tracks are too sharp.

(f) There is no train yard in which to make up and break up trains.

(g) The express facilities are inadequate.

(h) The facilities for handling mail and baggage are inadequate, especially for the heavy volume of parcel post, for which no special facilities have been provided.

(i) The engine house facilities are inadequate, and, being located on the opposite side of the depot from some of the coach yard tracks, unnecessarily increase the number of movements through the station approaches.

(j) The coach yards are inadequate, and, be-

ing located both east and west of the station, result in unnecessary movements across the station approaches in making up and breaking up trains.

(k) The waiting room is too small and the ticket office is poorly located.

Surroundings and Approaches

The surroundings and street approaches to the station are unsightly and deficient. They should be improved. For many years this subject has been under discussion. Various parkways and plazas have been proposed, but the proposals have not been fruitful of results.

A tangible plan to accomplish at least part of the desired results is now in progress, having been approved by the Board of Public Service and the Board of Aldermen of the city. It provides for adding 40 feet to the width of Walnut street, making it 100 feet wide from Third street to Broadway, building a new street 100 feet wide diagonally from Broadway at Walnut street to Market street at Seventh street, and widening Market street from its present width of 60 feet to 100 feet from Seventh street to Vandeventer avenue, a distance of thirty-two blocks (Union Station faces Market street between Eighteenth and Twentieth streets).

The plan also provides for condemning the two blocks in front of the Union Station to Chestnut street, next north of Market street, from Eighteenth street to Twentieth street, to form a plaza and park in front of the station about 250 feet wide and 800 feet long. The additional space thus provided will also relieve the vehicular congestion.

The Committee approves this plan.

There should be at least one east and west street and at least one north and south street widened by the city to improve access to and from the station.



Fig. 28.—Umbrella Train Shed, Washington, D. C.

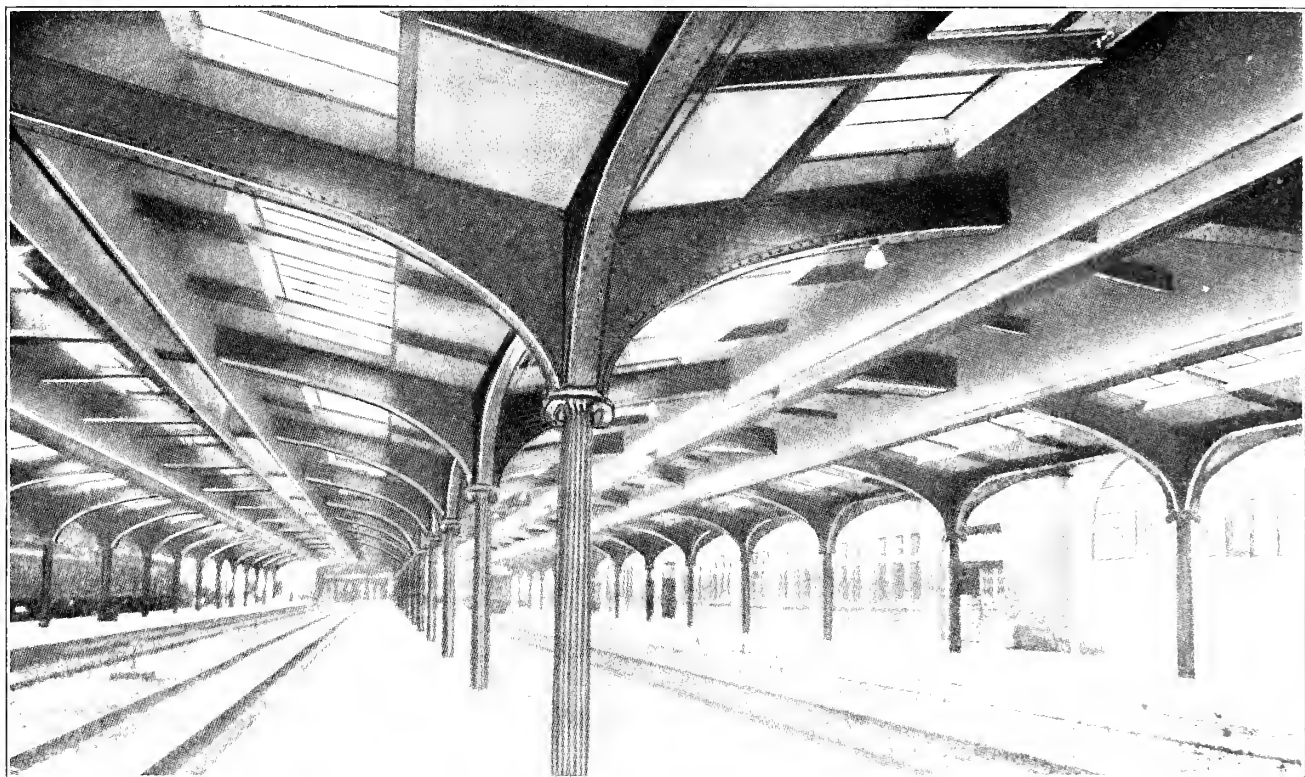


Fig. 29.—Bush Train Shed, Ottawa, Canada.

The street car company should provide a north and south cross town line connecting with all radial lines and extending from Broadway on the north to Broadway on the south. At no distant date in future this line should be placed underground from south of Market street to north of Franklin avenue to expedite access to the station.

Train Shed

The objection to the present train shed can be removed by taking it down and replacing it with a modern train shed of the "Bush" type or umbrella type. Illustrations accompanying this report show the outlines of balloon sheds in use at St. Louis and at the South Station, Boston, Mass., also typical cross sections of the Bush type and the umbrella type train sheds.

A balloon type train shed somewhat similar to the St. Louis shed was recently taken down and replaced by an umbrella shed at the North Station, Boston. A few years ago a similar shed was taken down and replaced by an umbrella shed at Cleveland. A similar balloon type shed at Hoboken on the Pennsylvania is now being taken down. The balloon type has not been used in modern train shed construction, but on account of the objectionable features previously mentioned has been superseded either by the Bush type or umbrella type. No decision has been reached as to the type of train shed for the new Chicago Union Station, except that it will not be the balloon type.

The illustrations accompanying this report show details of the cross-sections of the Bush type train shed used at Hoboken, N. J., Chicago, Ill., Scranton, Pa., Jersey City, N. J., Baltimore, Md., Detroit, Mich., Kansas City, Mo., Indianapolis, Ind., Ottawa and Montreal, Canada, and also the umbrella type shed used at Washington, D. C., and St. Paul, Minn.

The Bush type train shed covers the entire area over platforms and tracks, except a slot for the locomotive smokestacks. It is better adapted to cold climates than the umbrella shed. The Bush type shed was installed at Kansas City Union Station, but it was found unnecessary there to roof over the space between the tracks.

At Washington, D. C., which has a winter climate about the same as St. Louis, the umbrella sheds have given entire satisfaction.

Midway

The midway can be widened and additional space added to the waiting rooms, ticket offices and other station facilities, by cutting off the ends of the present station tracks, which, however, will not be feasible until some means be found to lengthen those tracks. At such time as this can be done, the midway should be increased 40 feet to give it a width of 100 feet, the same as at Washington, D. C.

Platforms Between Tracks

The platforms can be widened, either by reducing the number of tracks, which is most objectionable, or by widening the train shed.

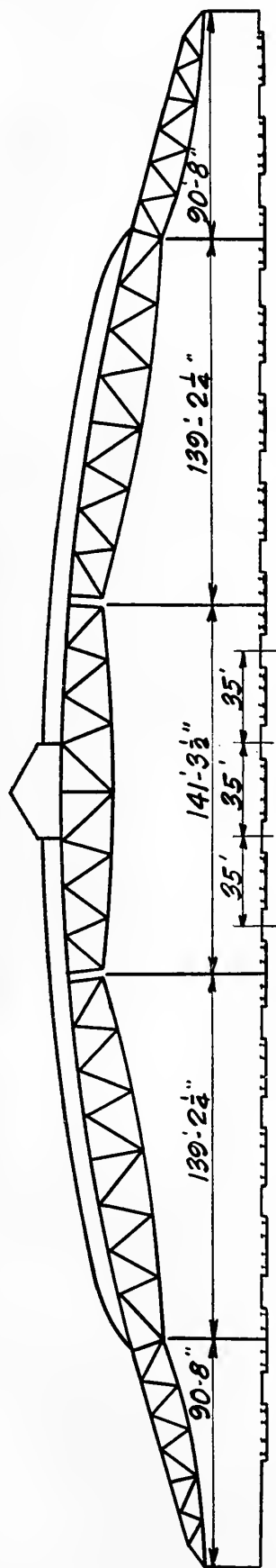
Fortunately Twentieth street, north of Market street, is about 140 feet west of Twentieth, south of Market street. If 140 feet be acquired from the east end of the three blocks west of Twentieth street, from Market street to Clark avenue, and Twentieth street be moved over south of Market street, to line up with Twentieth street north of Market street, 140 feet will be added to the track space and baggage room; 80 feet will be sufficient to retain the present number of tracks and widen the station platforms to 18 feet, leaving 40 feet to be added to the present 36-foot baggage room and 20 feet to widen Twentieth street to 80 feet.

If the Bush type or umbrella type sheds be used, the platforms should be not less than 18 feet wide and tracks 12 feet centers, if the train shed supports be located in the platforms; the platforms should be 16 feet wide and track centers 14 feet if the supports are located between the tracks.

Length of Station Tracks and Approach Curves

Consideration has been given to two methods of lengthening the station tracks and flattening the approach curves.

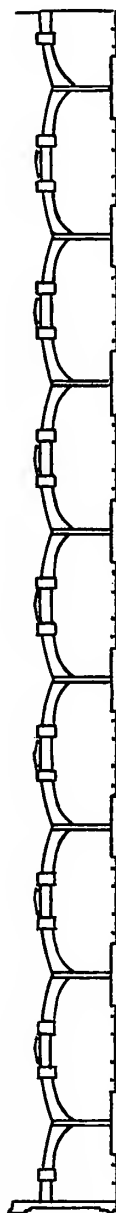
1. Extending the tracks through the passenger station to or across Market street.
2. Moving the entire body of tracks in Mill Creek Valley south to Gratiot street or beyond and utilizing the space thus obtained.



CROSS SECTION OF TRAIN SHED - ST LOUIS UNION STATION

Similar Type in use at South Station-Boston, Mass.

(Similar Type at North Station, Boston, recently replaced with Umbrella Sheds)



TYPICAL CROSS SECTION OF BUSH TYPE TRAIN SHED

40' span gives 18' platform
 42' " " 20' "
 44' " " 22' "

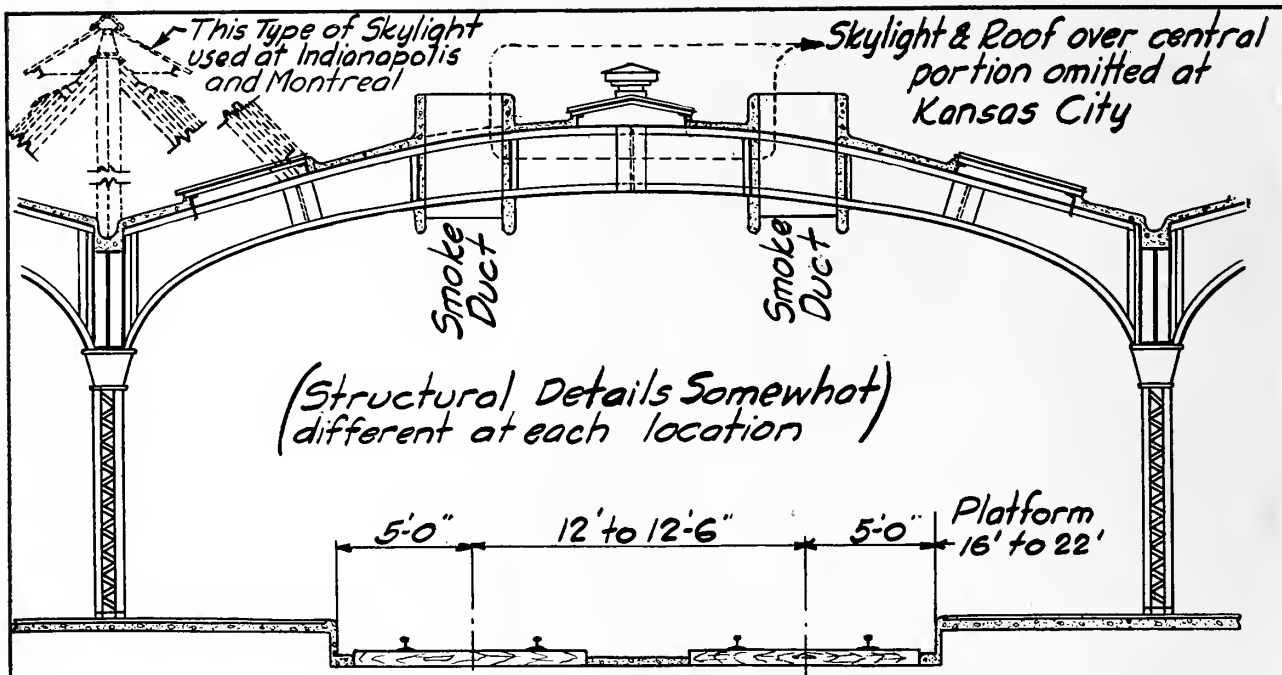
USED AT :-

Hoboken, N.J. Baltimore
 Buffalo Detroit
 Chicago Kansas City
 Scranton Indianapolis
 Jersey City Ottawa
 Montreal

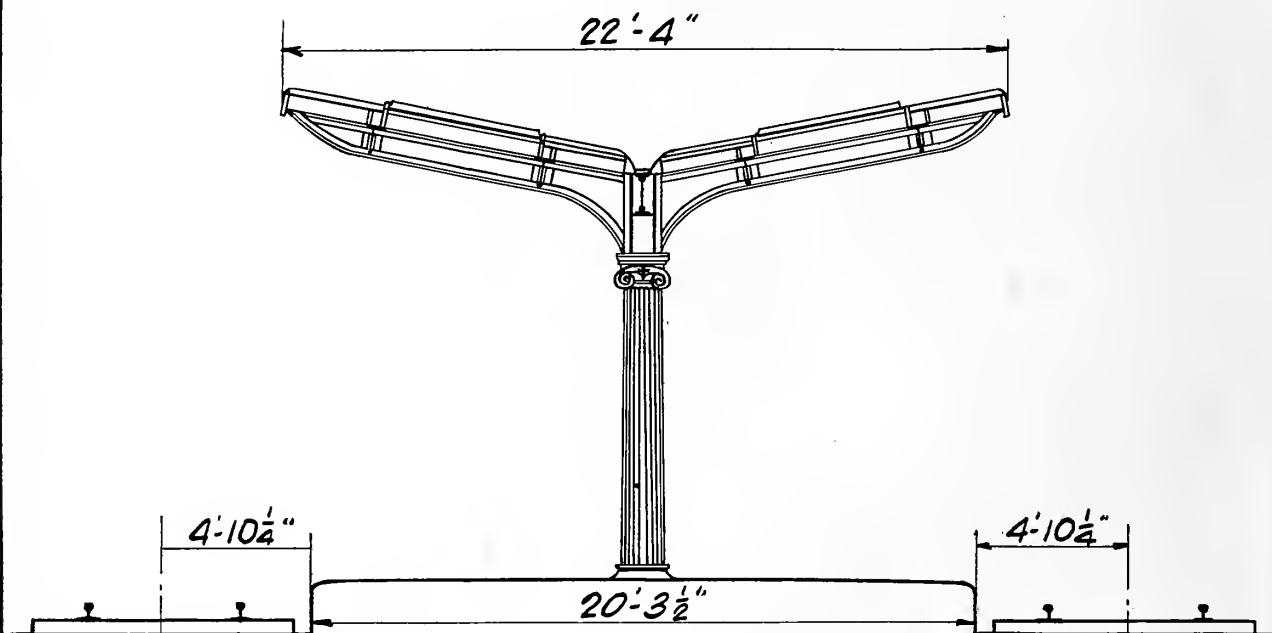
OUTLINE CROSS SECTIONS OF BALLOON & BUSH TYPE TRAIN SHEDS 1921

*Prepared for Engineers Committee Investigating
 St. Louis-East St. Louis Railroad Terminals
 C.E. Smith & Co. Consulting Engineers.*

Fig. 30.—Outline of Balloon and Bush Type Train Sheds.



DETAIL CROSS SECTION OF TYPICAL BUSH TYPE TRAIN SHED



DETAIL CROSS SECTION OF UMBRELLA TRAIN SHED AT WASHINGTON, D. C.

**DETAIL CROSS SECTIONS
OF -
BUSH TYPE & UMBRELLA TRAIN SHEDS.
1921**

*Prepared for Engineers Committee Investigating
St. Louis - East St. Louis Railroad Terminals
C.E. Smith & Co. Consulting Engineers.*

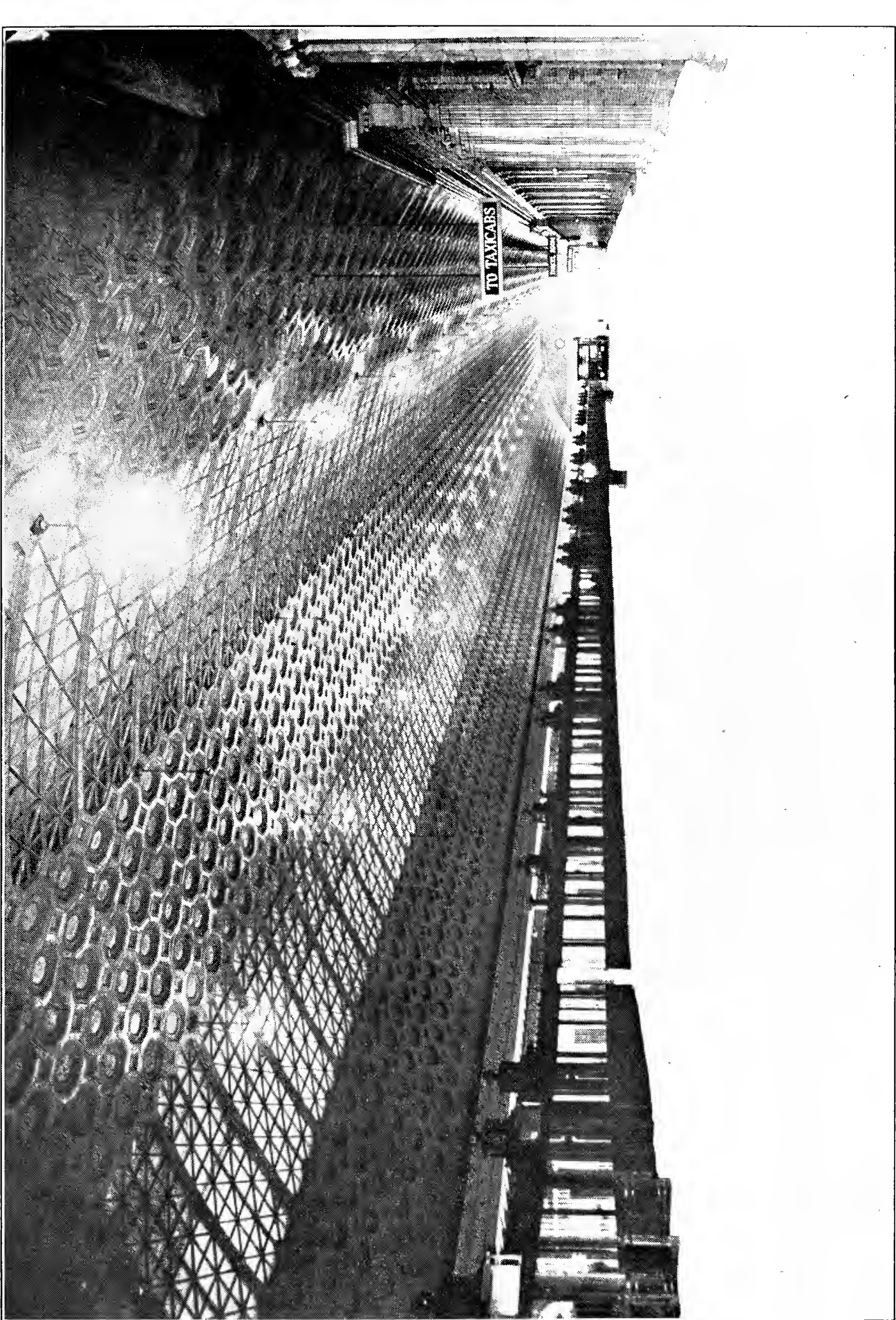


Fig. 32—Midway—Union Station—Washington, D. C.

The first plan was dismissed as impracticable, involving as it would, engineering difficulties, expense and loss of other facilities not commensurate with the gains.

The second plan would provide approximately 450 feet more length than at present.

Assuming that the Missouri Pacific and Terminal Railroad Association would each retain their present widths of track space south of the Union Station approach, this extra 450 feet would provide 200 feet for flattening the approach curves from 15 degrees to 10 degrees and add 200 feet to the station tracks, making them from 1,050 to 1,150 feet in length. The remaining 50 feet would be available for widening the present midway.

This plan has the distinct advantage, that by throwing the entire body of tracks in Mill Creek Valley to the south, including the east and west approach tracks of the Union Station, valuable space now occupied by tracks along the north edge of the Terminal property east and west of the station, would be released for other purposes.

East of the station space would be available for team tracks, railroad warehouses, suburban coach and engine facilities, switch leads and storage tracks for local freight houses and Cupples Station.

West of the station space would be available for train tracks for making up and breaking up passenger trains, additional and enlarged baggage, mail and express facilities, additional facilities for handling locomotives, additional yards for passenger train cars, team tracks, and other necessary facilities.

The latter plan also has the advantage that it would provide space that is urgently required for a passenger train yard immediately adjoining the station, and the correction of the inadequacies in baggage, mail and express facilities, engine house facilities, etc.

The Committee recommends that the second plan be carried out for the reasons stated above.

Passenger Train Yards

At the present time when an incoming passenger train backs into the station, the engine is cut off and run to the engine house; the train remains on the track until all mail and baggage and some express are unloaded, after

which a switch engine goes into the station and hauls out part or all of the train; thus at least four movements are made for each incoming train, and four similar movements for each outbound train.

The present station tracks practically serve as train tracks where trains are made up and broken up, at least to the extent of taking off and putting on the locomotives. If engines were attached to trains being made up, before trains are placed on the station tracks and engines detached after removing trains from the station, the number of movements through the station approaches would be reduced one-half.

This can be accomplished by moving the locomotive facilities and all passenger train car facilities to one side of the station. Room is available to the west.

The proposed plan shows such a passenger train yard for making up and breaking up passenger trains, immediately west of the west station connection, next to which is shown the location for enlarged engine facilities. In that yard the locomotives would be attached to and detached from the trains; switch engines would switch baggage, mail and express cars between the head end tracks set aside for those purposes and the yard tracks. Other switch engines would handle passenger coaches, Pullmans, etc., between the passenger train yard and the appropriate yards. Under this plan it would be necessary for road trains to occupy station tracks only while loading and unloading passengers, while unloading mail, baggage and express for immediate connections, and while loading late arriving mail, baggage and express.

The addition of nine tracks for this purpose close to the South Station at Boston very materially relieved congestion at that station.

Baggage, Mail and Express Facilities

A noteworthy feature of the Union Station is the baggage, mail and express tunnel under all the tracks connecting with Eighteenth street and Twentieth street near the south end of the train shed. This subway is 96 feet 6 inches wide, divided as follows:

Outbound Baggage Room.....	42' 6"
Roadway for Trucks.....	43'
Mail and Express Platform.....	11' 0"

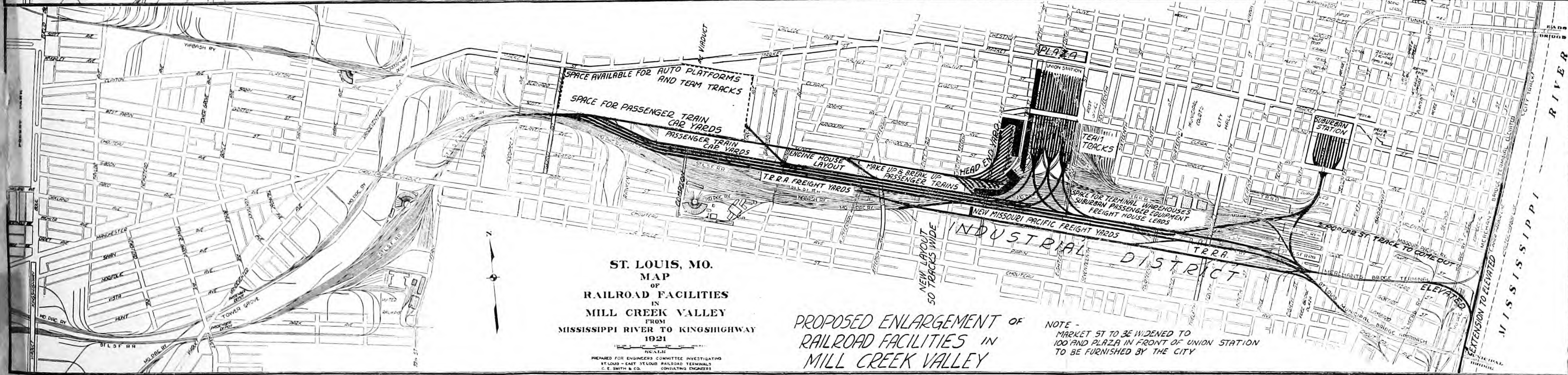
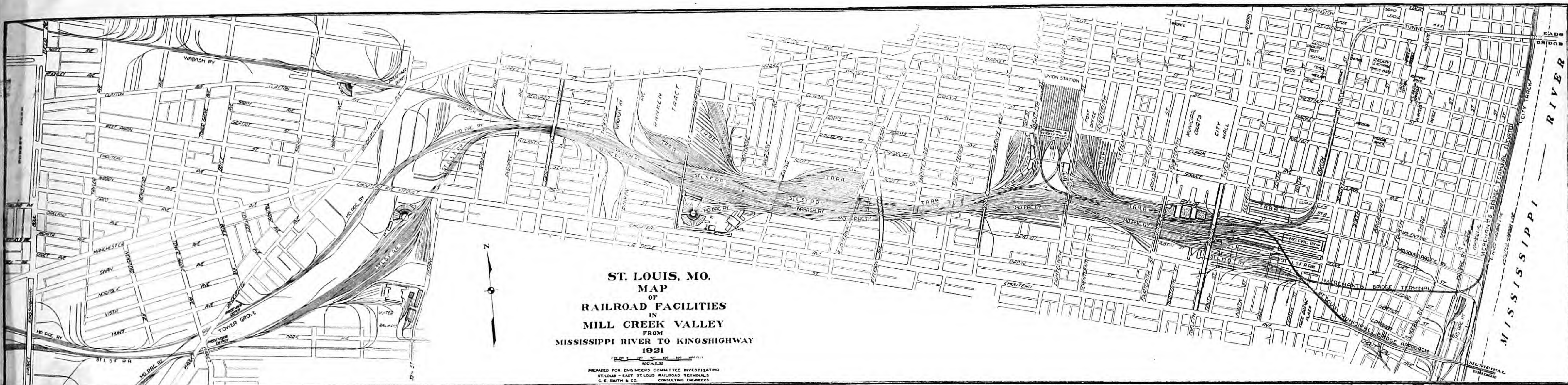
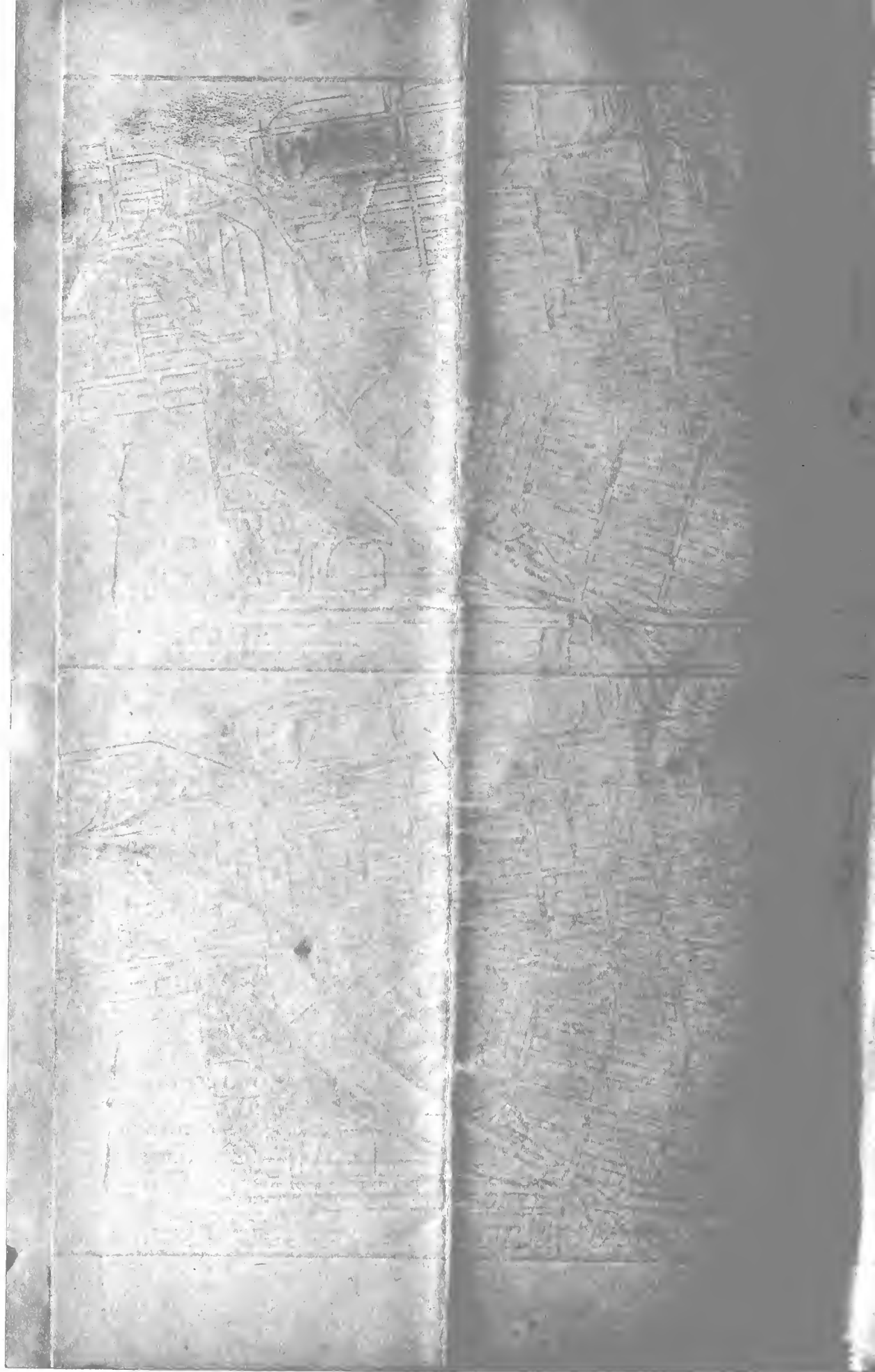


Fig. 33—Present Railroad Facilities in Mill Creek Valley and Proposed Enlargement of Facilities.



On the mail and express side sixteen elevators located between the tracks are set in recesses in the south wall. Sixteen baggage elevators are located in the outbound baggage room. Outbound baggage is delivered in the subway opposite the elevator serving the train on which the baggage is to leave. Similarly outbound mail and express that is not loaded directly into cars at the express buildings are handled partly on trucks and drays direct

features. Only a small part of the additional real estate that would be required is improved.

Comparison of the present layout with the proposed layout shows the present narrow throat of tracks west of the Station widened out, and all facilities enlarged to meet present and future requirements.

Statistical comparison between the present and ultimate proposed Union Station facilities is as follows:

TABLE VII—STATISTICAL COMPARISON BETWEEN PRESENT AND PROPOSED UNION STATION FACILITIES.

	Present	Proposed
Midway	60 feet wide	100 feet wide
Station Tracks.....	32	32
Length of Station Tracks.....	850 to 900 feet	1,100 to 1,150 feet
Approach Curves	15 degrees	10 degrees
Outbound Baggage Room.....	600 feet long	800 feet long
Inbound Baggage Room.....	9,000 square feet	45,000 square feet
Tracks for Baggage Cars.....		12 cars
Mail and Express Buildings to be divided as required west of Station	4,500 square feet	100,000 square feet
Tracks at Mail and Express Buildings and Head End Yard..	60 cars	150 cars
Train Yard.....	None	20—1200-foot tracks
Engine House Facilities.....	150,000 square feet	350,000 square feet
Passenger Train Car Yards.....	2,000,000 square feet	4,000,000 square feet
Team Tracks and Warehouses.....	500,000—12 acres	1,000,000—24 acres
Suburban Station	None	20 tracks
Grade from Twelfth Street to Merchants Elevated and Municipal Bridge	2 per cent	1 per cent

from outlying stations and partly on platform trucks from the mail and express stations.

All inbound mail, baggage and much of the express are handled down the 32 elevators and by platform trucks to the respective buildings.

The new plan proposes no change in the handling of outbound baggage, but provides largely increased facilities and spur tracks for the handling of outbound mail and express and for the unloading of inbound baggage, mail and express away from the station tracks.

The present facilities for this purpose are inadequate. The lengthening of station tracks and widening station platforms would require the removal of the present express buildings. Room for enlarged express buildings, additional head end tracks and mail building is available between the present location and Twenty-first street.

Proposed Plan of Mill Creek Valley

Illustrations accompanying this report show the present and proposed railroad layouts in Mill Creek Valley, including the improvement of the Union Station facilities, location of proposed suburban station, and other improved

Sequence of Improvements

It would not be necessary to carry out at one time all the improvements shown on the proposed plan, but it could be done, in steps, about as follows:

(a) Purchase of land south of tracks and moving Missouri Pacific yard. This would provide an easier approach to the Merchants Elevated and the Municipal Bridge than the present 2 per cent incline near Twelfth street, and would release land for other purposes east of the Station.

(b) Purchase of land north of tracks west of Union Station and the progressive development of the final layout of passenger train yard, engine facilities, etc., as required.

(c) At any time after completion of (a) and regardless of status of (b) the main station leads could be thrown south, the new flatter curves put in, all station tracks lengthened except those interfering with express buildings, and temporary connections made with new throats. The Midway could be widened at this time.

(d) Only after the completion of (a) and (c)

could the present train shed be taken down, the tracks spread, platforms widened and umbrella sheds built. At this time it would be desirable to rebuild the express facilities to permit the track and platform work to be completed.

(e) The ticket office and waiting room could be rearranged and enlarged at any time.

The Committee recommends that the plan accompanying this report, entitled "Proposed Enlargement of Railroad Facilities in Mill Creek Valley," be adopted by the railroads as an ultimate plan for development, and that all future improvements in that district conform to that plan.

CARLOAD FREIGHT DESCRIPTION AND OPERATION OF FREIGHT TERMINALS

The freight carrying railroads in the St Louis-East St. Louis railroad terminals are as follows:

Fifteen Members of Terminal Railroad Association:

B. & O. R. R. Co.
C. B. & O. R. R. Co.
C. & A. R. R. Co.
C. R. I. & P. Ry. Co.
C. C. C. & St. L. Ry. Co.
Illinois Central R. R. Co.
L. & N. R. R. Co.
M. K. & T. Ry. Co.
Missouri Pacific R. R. Co.
Pennsylvania R. R. Co.
St. L. S. F. Ry. Co.
St. L. S. W. Ry. Co.
Southern Ry. Co.
Wabash Ry. Co.
St. L. I. M. & S. Ry. Co. (Merged with and herein referred to under Mo. Pac. R. R.)

Not Members of Terminal Railroad Association:

C. & E. I. R. R. Co.
C. P. & St. L. R. R. Co.
M. & O. R. R. Co.
T. St. L. & Western Ry. Co.
Illinois Traction System.

Short Coal Roads:

East St. L. & Sub. Ry. Co.
L. & M. Ry. Co.
St. L. & O'F. Ry. Co.
St. L. T. & E. R. R. Co.
St. L. & O. R. R. R. Co.

Switching Companies:

A. & S. R. R. Co.
East St. L. J. R. R. Co.
Manufacturers' Ry. Co.
Terminal Railroad Association of St. Louis.

Freight is handled on each side of the Mississippi River by the following railroads:

West (St. L.) Side of Miss. River:

C. B. & O.—West	St. L. S. F.—South
M. K. & T.	Mo. Pac.—West
Wabash—West	Mo. Pac.—South
C. R. I. & P.	Ill. Traction System
C. & E. I.	Manufacturers' Ry.
St. L. S. F.—S. W.	

Terminal Railroad Association of St. Louis, consisting of
Wiggins Ferry
St. L. Merchants Bridge Term. Ry.
Terminal R. R.

East (E. St. L.) Side of Miss. River:

C. P. & St. L.	St. L. & O'F.
C. & A.	L. & N.
C. B. & O.—North	E. St. L. & Sub.
C. C. C. & St. L.	Southern
C. & E. I.	St. L. & O. R.
Wabash—East	I. C.—South
L. & M.	St. L. S. W.
I. C.—North	Mo. Pac.—South
T. St. L. & W.	M. & O.
St. L. T. & E.	E. St. L. C. & W.
Penn.	Ill. Traction System
B. & O.	Alton & Southern
C. B. & O.—East	E. St. L. Jct. Ry.

Terminal Railroad Association of St. Louis, consisting of
Wiggins Ferry Co.
St. L. Merchants Bridge Term. Ry.
Terminal R. R.

None of the railroads listed only on the west side of the river have any terminals on the east side. Of the railroads listed only on the east side of the river, none have facilities on the west side, except the Pennsylvania, the L. & N. and the St. L. S. W., which have local freight stations connecting with the rails of, and served by, the Terminal Railroad Association.

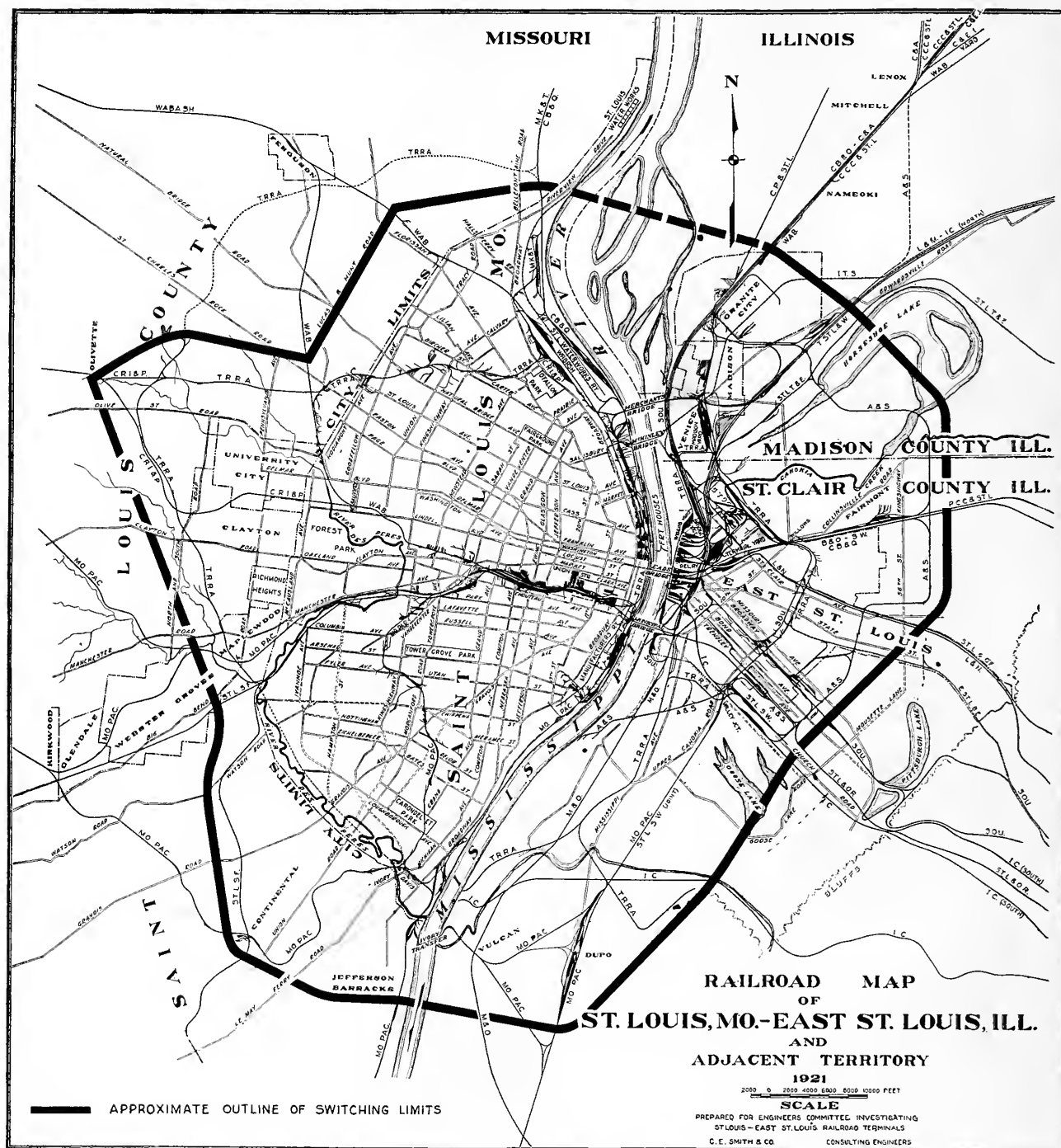


Fig. 34—Approximate Outline of Switching Limits.

Of the companies named six are terminal switching and transfer companies as follows:

Alton & Southern (east side only), East St. Louis Outer Belt;
 East St. Louis Junction Ry. (east side only) Stock Yards Terminal;
 Manufacturers' Ry. Co. (west side only);
 St. L. Merchants Bridge Term'l Ry. (both sides of river);
 Terminal Railroad Association of St. Louis (both sides of river);
 Wiggins Ferry Co. (both sides of river).

The Alton & Southern Railroad serves a number of industries, and in addition performs interchange of cars between roads with which it connects, from Granite City on the north to the Mississippi River on the south. It connects with all east side railroads except the C. & A., C. B. & Q., C. C. C. & St. L., C. & E. I., Wabash, Ill. Tract. System, and E. St. L. Jct. Avoiding as it does the Terminal congestion it affords an expeditious outer belt movement. It has relieved the terminals several times during congested periods in recent years by providing a route for freight that might otherwise have been embargoed. The Alton & Southern is not controlled by any trunk line.

The East St. Louis Junction Railway serves the East St. Louis Stock Yards, the large packers and several smaller industries. It has connections with the Terminal Railroad Association and several other East St. Louis railroads. It does not interchange cars between railroads. It is not controlled by any trunk line.

The Manufacturers' Railway serves an industrial district in South St. Louis, connecting with approximately 8 per cent of all of the industries in the City of St. Louis. It has connections with the Missouri Pacific Railroad and with the tracks of the City of St. Louis, now used by the Terminal Railroad Association. It does not interchange cars between railroads. It is not controlled by any trunk line.

Terminal Railroad Association of St. Louis

The Terminal Railroad Association of St. Louis is a terminal transfer and switching company with facilities on both sides of the Mississippi River connected by two bridges.

It is a co-operative enterprise; its stock is held in equal proportion by the fifteen trunk railroads previously mentioned. It is the only company that has connections with all railroads on both sides of the river.

The Terminal Railroad Association is composed of over twenty subsidiaries, which are grouped into three operating companies, viz:

Terminal Railroad (Eads Bridge Route);
 St. Louis Merchants Bridge Terminal Railway;
 Wiggins Ferry Co.

Although there are three operating companies, the facilities are used interchangeably to a certain extent.

The Terminal Railroad furnishes the Union Passenger Station, and, with the St. Louis Merchants Bridge Terminal, furnishes passenger train routes for all railroads. It also handles freight between railroads in the Mill Creek Valley and East St. Louis via the Eads Bridge, using the large central clearing yard near Relay Depot and yard tracks in St. Louis. It also has a universal l. c. l. freight station in the Mill Creek Valley for all lines and serves the Cupples Station.

The St. Louis Merchants Bridge Terminal Railway operates the Illinois Transfer Railway (East St. Louis Outer Belt), which extends around East St. Louis from the Merchants Bridge to Valley Junction, lines to Madison and Granite City, a river front line in St. Louis partly elevated from the Mill Creek Valley to North St. Louis and an outer belt north and west of St. Louis. It has the large central clearing yard known as Madison Yard on the east side and several smaller yards on the west side. It handles freight between railroads and industries on both sides of the river.

The Merchants has no l. c. l. facilities, but handles that business for other railroads. In the Mill Creek Valley the Merchants serves the Seventh street freight station of the St. L. S. F. In North St. Louis it serves the off-line freight stations and team tracks of the Missouri Pacific, St. L. S. F., C. & E. I., C. R. I. & P., M. K. & T. and St. L. S. W. It also serves the off-line freight stations of the L. & N. and Pennsylvania in North St. Louis.

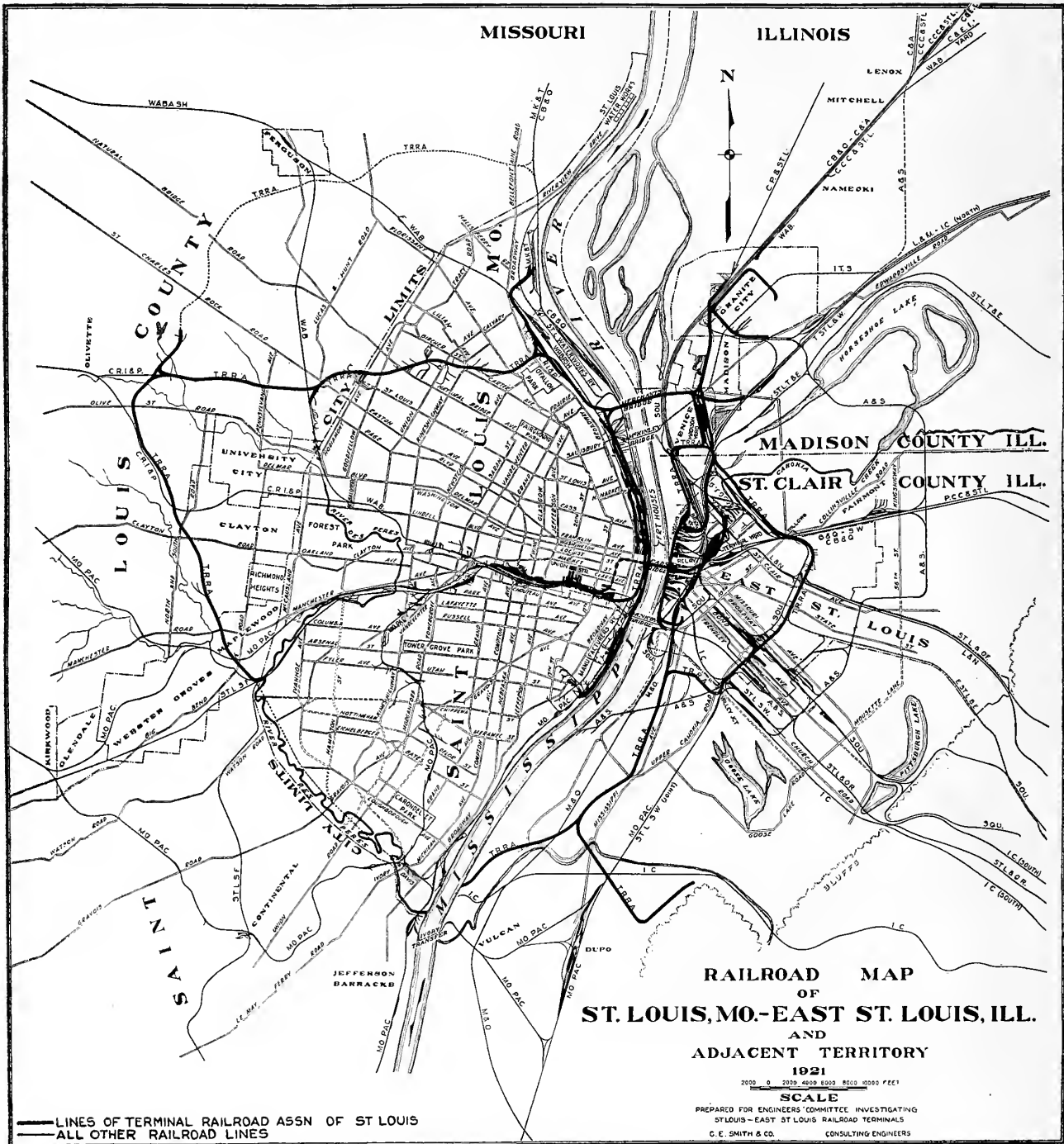


Fig. 35—Lines of Terminal Railroad Association of St. Louis.

which were in operation by those companies in 1920.

The Wiggins Ferry Company operates railways on the river front on both sides of the river. For many years it handled freight cars across the river on car ferries. That service was suspended when the East St. Louis levees were commenced several years ago and has not been resumed. The connection between the lines on the two sides of the river, formerly furnished by the car ferries, has been superseded by an all-rail route over the Venice high line and the Merchants Bridge crossing overhead the C. & A., C. C. C. & St. L., Wabash and V. & C. Belt of the Southern Railway.

The Wiggins Ferry has a large central clearing yard on the East St. Louis water front and several smaller yards.

Practically all cars received by the Terminal Railroad Association for delivery to railroads, with the exception of live stock and perishable freight which is handled direct, and a small percentage of dead freight that is handled direct, pass through and are classified in the three large central clearing yards. These central clearing yards have the advantage that there may be assembled in them from several railroads, large cuts of cars for the individual roads. They have the distinct and decided disadvantage of necessitating assembling from interchange tracks and a second classification with consequent delay. The present yards do not conform to modern principles of yard design, principally because they are too short for the progressive movement of cars through them. The receiving tracks, classification tracks and departure tracks are side by side instead of in succession, which necessitates continuous retrograde and switchback movements. The Wiggins Yard is the only one of the three so located that it could have been designed for progressive movements.

The Terminal Yard at Relay is an outgrowth of early conditions. At its west end is the Relay Depot, the Pennsylvania, the C. C. C. & St. L. and the foot of the Eads Bridge approach. At its east end are the packers and stock yards.

The Madison Yard is congested at both ends. At the north end is the junction of the

Merchants Bridge approach, the Granite City lines, the Illinois Transfer Railway and the Madison lines, crossed at grade by a busy city street with street cars and interurban electric railway. At the south end is the crossing of the Illinois Transfer Railway and the V. & C. Belt by the T. St. L. & W., C. P. & St. L., I. C. and St. L. T. & E.

The facilities of the Terminal Railroad Association are sufficient in normal times to handle all the freight its connections can handle, but as its facilities are the outgrowth of early conditions and not of modern design, they are slow and expensive in operation. There are many long detours, retrograde and switchback movements which proper design and operation can eliminate. Even in normal times there is much complaint of the slow handling of cars by the Terminal Railroad Association. In busy periods the dissatisfaction is most intense.

The Terminal Railroad Association and its associated companies, the Merchants and the Wiggins, have on their lines 27.1 per cent of the west side industries and 39.2 per cent of the east side industries, amounting to 29.3 per cent of the industries in the entire district.

The Terminal Railroad Association is the St. Louis terminal of all the east side lines. Likewise it is the east side terminal of all the west side lines. Generally speaking it is the common terminal of the entire district for all lines.

As the service of the Terminal Railroad Association is available to all railroads on an equal basis, and as no preference is shown to any railroad, each railroad is on a par with all other railroads at all points served by the Terminal Railroad Association. Consequently there has not been at St. Louis that keen competition in the development of individual terminals that has taken place in other cities.

Although the Terminal Railroad Association and its affiliated companies are controlled by fifteen proprietary companies, those companies do not enjoy any special privileges, but on the other hand carry a potential liability through their individual and collective guarantee of all Terminal Railroad Association obligations.

The rates of the Terminal Railroad Association and its subsidiaries, the Merchants and the Wiggins, consist of tariffs so made that in normal times the entire expense and fixed charges are recovered through its rates, to the end that the proprietary lines are never called on to make up deficits. The tariff rates are the same for all connecting railroads, whether proprietary lines or not. The management has been quite successful in avoiding deficits that would have to be charged back to its fifteen proprietors; on the other hand, it has been successful in normal years in earning sufficient surplus to take care of its minor capital requirements for improvements and betterments.

Generally speaking, the proprietary lines do not use any of the tracks of the Terminal Railroad Association in interchanging freight directly between trunk lines, although there are a few such movements specially arranged through contract in past years.

One of the exceptions in the handling of freight is the C. & E. I., which operates its own locomotives over the Merchants Bridge and Terminal Railroad Association tracks, from the east side of the Mississippi River, to the yards of the St. L. S. F. on the west side of the river. For that service the C. & E. I. pays the Terminal Railroad Association the same charges as though the cars were delivered by the C. & E. I. and the St. L. S. F. for interchange, with the exception that the Terminal Railroad Association credits the C. & E. I. an appropriate amount for the use of its locomotives in performing the service. Similarly the C. & A. operates with its own engines in and out of the Missouri Pacific Twenty-third street yard, St. Louis. There are very few such movements, most of the freight movements being handled by Terminal Railroad Association locomotives. Another exception is the Wabash, which handles freight between its east and west lines with its own engines across the Merchants Bridge.

Most of the east side lines handle live stock in and out of the Stock Yards with their own engines, using tracks of the Terminal Railroad Association. Otherwise the Terminal lines are not open to freight movements of its connections with the locomotives of the connect-

ing lines, unless such connecting lines pay the regular tariff rates, the same as though the Terminal handled the freight in the regular manner. This is different from the handling of passenger trains, which are handled over Terminal tracks by the engines of the individual roads to the greatest practicable extent.

As the Terminal Railroad Association handles the bulk of the freight interchanged between railroads, and as it handles freight to and from industries and team tracks for all railroads and to and from St. Louis freight houses for many railroads, as well as handling the great bulk of the trans-river business, it plays a most important part in the handling of freight for all railroads in the St. Louis-East St. Louis railroad terminals. For this reason the details of its operations will be described here, following which the other railroads in the terminals and their operations will be described.

Terminal Railroad (Eads Bridge Line)

The Terminal operates between connections with the Wabash, Missouri Pacific and St. Louis-San Francisco, in the Mill Creek Valley near the St. Louis Union Station, and its connections with nearly all east side railroads via the Tunnel and Eads Bridge.

Live stock and perishable freight are handled direct from one road to another by Terminal engines without delay. Dead freight is assembled in its yard and classified before delivery.

The principal classification yard of the Terminal is in East St. Louis, northeast of Relay Depot, known as C. D. Yard.

All east side roads having cars for delivery to other roads or for local delivery in the Mill Creek Valley at St. Louis deliver such cars in C. D. Yard, the engines of those roads returning light to their own yards; the cars are then classified in C. D. Yard and delivered by Terminal engines to the respective roads on designated receiving tracks. The Terminal engines making such deliveries on the east side return light to C. D. Yard. The Terminal engines handling cars across the river are loaded in both directions.

The west side roads, connecting with the Terminal in the Mill Creek Valley deliver all

cars for east side roads in the Twenty-third Street Yard, St. Louis. These cars, as a rule, are not classified in the Twenty-third Street Yard, but are taken over the Eads Bridge to C. D. Yard, where they are classified and delivered to the respective roads.

Occasionally, however, when a solid cut is delivered, as for example say, by the Missouri Pacific for the Pennsylvania, the Terminal engines take the Merchants Bridge route and deliver direct to the receiving road, avoiding the Terminal yard in East St. Louis. Movements of this kind are also made occasionally because of the capacity of the Eads Bridge which limits the size of train to be moved. Cars destined for local delivery in the Mill Creek Valley by the Terminal are classified either at the Twenty-third Street Yard or the Eleventh Street Yard in St. Louis.

St. Louis Merchants Bridge Terminal Ry.

The St. Louis Merchants Bridge Terminal Railway interchanges cars with every railroad on both sides of the river.

Live stock and perishable freight is handled direct from one road to another without delay. Dead freight is assembled in its yards and classified before delivery.

Some east side lines deliver cars into Madison Yard, while others deliver on designated interchange tracks outside of Madison Yard. In the opposite direction the Merchants delivers into the yards of those roads that deliver into Madison Yard and on the designated interchange tracks for other roads. As a rule both the Merchants engines and engines of other lines return light after making deliveries.

The C. & E. I., however, is an exception, as it delivers into Madison Yard and receives in the same yard, the movement in both directions being made with its own engines. The Missouri Pacific is another exception. That road furnishes interchange tracks at Dupo and makes several classifications for the Merchants, which reciprocates by handling cars in both directions to and from Dupo Yard.

On the west side of the river the Merchants receives from and delivers to west side lines at a number of points, the classifications being made at the Harlem Yard, Bulwer Avenue

Yard and Bremen Avenue Yard, when the movement of cars is between west side lines only. When the movement is between east side lines and west side lines the classification is made in Madison Yard, as mentioned above.

The classification of practically all cars received from and delivered to east side lines is made in the Madison Yard, including those cars received from and delivered to west side lines via the Merchants. The one exception to the movement is the L. & M. Ry., which places cars for west side lines on the Merchants interchange track in road cuts. The Merchants then delivers those cars direct to the respective roads, thus avoiding the necessity of handling those cars in Madison Yard.

The Merchants does considerable industrial switching on both sides of the river. Such cars are generally classified at small local yards in the vicinity of the industrial sections for the larger classification yards, where they are again classified for delivery to roads. The Merchants performs also the switching service for a number of freight houses of individual lines on the west side of the river. The movement between these houses and their respective roads, however, is direct and does not go into any of the classification yards. The roads having freight houses served by the Merchants are the M. K. & T., St. L. S. W., L. & N., P. C. C. & St. L., C. & E. I., C. R. I. & P., St. L.-S. F. and Mo. Pac.

Wiggins Ferry Co.

The Wiggins Ferry Co. operates along the river front on both sides of the river and connects with all roads on the east side, except the Illinois Traction System, L. & M., St. L. & O'F., E. St. L. & Suburban and A. & S. On the west side it connects with the Missouri Pacific, Manufacturers', C. B. & Q. and Wabash.

Live stock and perishable freight is handled direct from one road to another without delay. Dead freight is assembled in its yards and classified before delivery.

All cars via Wiggins Ferry to and from east side lines are classified in the Wiggins North Yard, on the east side of the river. The Wiggins Ferry receives from and delivers to east side lines on designated interchange tracks outside of the Wiggins Yard; the interchange

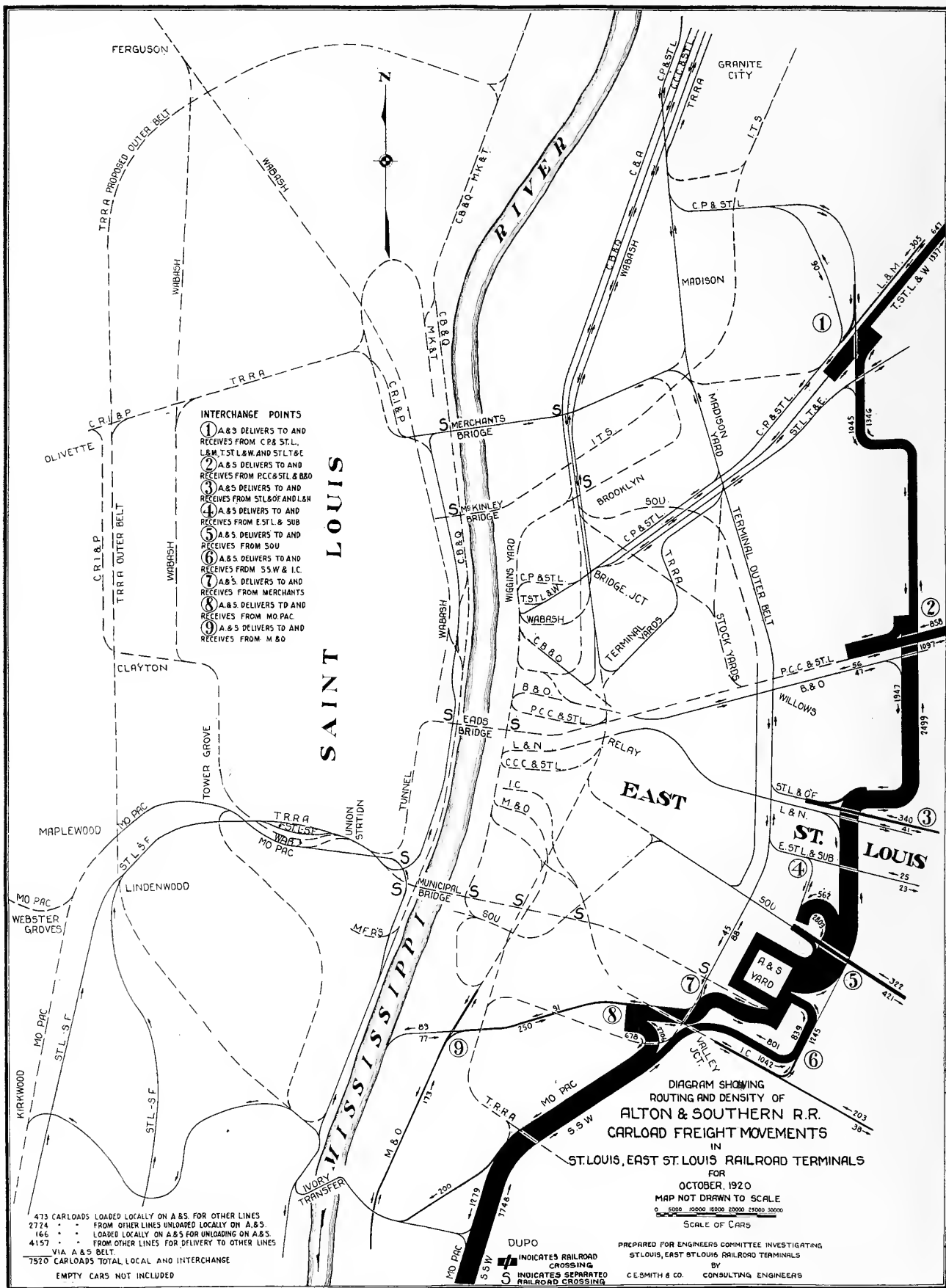


Fig. 36—Carload Freight Diagram—A. & S. R. R.

tracks in nearly all instances are in the river front yards of the other roads. Cars from west side lines for delivery to east side lines via the Wiggins Ferry are moved over the Merchants Bridge and the Venice High Line and classified in the Wiggins East Side Yard before delivery to the east side lines.

The interchange of cars between lines on the west side of the river via Wiggins Ferry is made in or near the several Wiggins Ferry yards on that side of the river, such as the Miller Street Yard, Tyler Street Yard and the Bremen Avenue Yard. On the west side, the roads deliver their cars into the Wiggins yards and the Wiggins Ferry delivers to the other roads, the engines of certain roads returning light. The Missouri Pacific is an exception. Deliveries in both directions are made in its Lesperance Street Yard.

The Wiggins Ferry does considerable industrial switching on the west side of the river, the cars from industries being classified at or near the industries for the larger classification yards, where they are again classified for the individual roads. Some industrial switching is performed on the east side, all the cars being classified in the Wiggins East Side Yard.

In addition to the movements of the three companies described above there is also an interchange movement between the three companies. For example, the Terminal delivers cars to the Wiggins and Merchants for delivery to industries on the rails of those companies and also for delivery to roads with which the Terminal has no direct connection—the other two companies do likewise.

The question as to which of the Terminal Railroad Association agencies will handle cars and the yards and interchange points through which such cars will be handled is at present decided by the operating officers of the Terminal Railroad Association.

Alton & Southern Railroad

The Alton & Southern Railroad is an outer belt terminal switching line extending around East St. Louis from the Fox Terminal on the Mississippi River south of East St. Louis to Granite City. It has but one yard, the Davis

Yard, at the east end of the eastern approach to the St. Louis Municipal Bridge.

It connects with 7.6 per cent of the east side industries; 1.4 per cent of all industries in the switching limits, and has a number of team tracks, but no freight house. It has no facilities in St. Louis.

Freight is interchanged by the Alton & Southern Railroad between the following railroads:

Mobile & Ohio,
Missouri Pacific,
East St. Louis, Columbia & Waterloo,
Merchants Bridge Terminal.
Illinois Central,
St. Louis Southwestern,
St. Louis & Ohio River,
Southern,
East St. Louis & Suburban,
Louisville & Nashville,
St. Louis & O'Fallon,
Baltimore & Ohio,
Pennsylvania,
St. Louis, Troy & Eastern,
Toledo, St. Louis & Western,
Litchfield & Madison,
Chicago, Peoria & St. Louis,
Also between those railroads and team tracks and industries on the Alton & Southern.

The Alton & Southern receives from and delivers to other roads at designated interchange tracks at or near the points of crossing with the various roads. In its interchange with other roads there is no light engine mileage except occasionally in connection with special unbalanced movements.

Cars received on interchange tracks are taken to Davis Yard, where they are classified and trains made up for all deliveries north and south of the yard.

Deliveries to interchange tracks, team tracks and industries are then made as the train proceeds to the end of the line. The engine making the delivery picks up cars on its return journey and delivers them to Davis Yard, where they are classified.

Frequently a solid train of cars passes between railroads without going to Davis Yard.

Some movements to and from large industries do not go into Davis Yard. For example, coal cars from the East St. Louis & Suburban

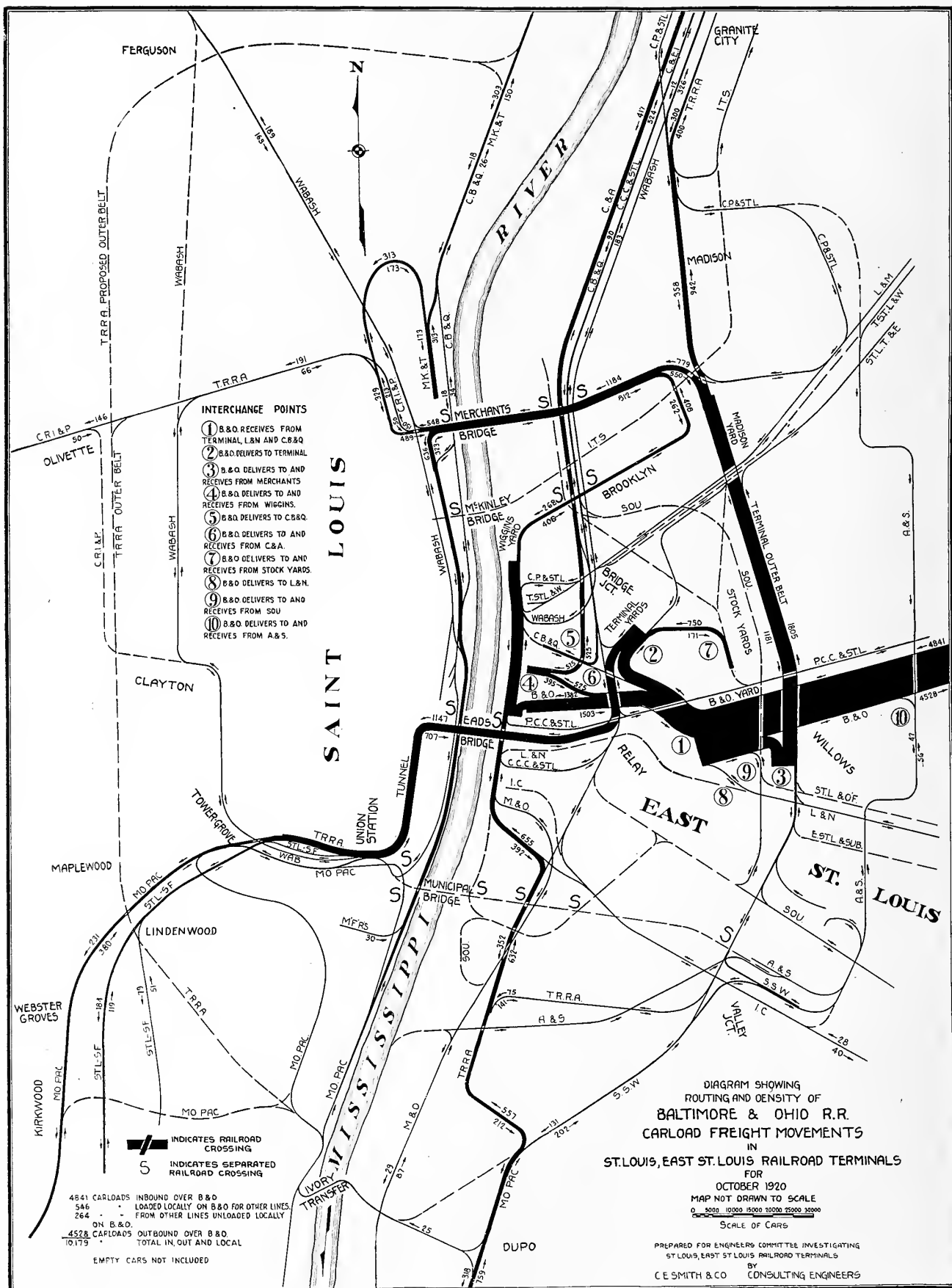


Fig. 37—Carload Freight Diagram—B. & O. R. R.

for the Aluminum Ore Co., and coal cars from the Litchfield & Madison for the St. Louis Coke & Chemical Co. are handled direct between these roads and the plants.

The Alton & Southern affords an expeditious route outside the congested terminals for interchange between railroads and enjoys a good volume of such business.

The Alton & Southern connects with the east end of the approach to the St. Louis Municipal Bridge at Twenty-ninth street, East St. Louis. It is the only east side railroad that now connects with that bridge. It is not possible to reach the east end of the bridge without using Alton & Southern tracks.

Baltimore & Ohio Railroad

The Baltimore & Ohio enters East St. Louis from the east parallel with and south of the Pennsylvania. It crosses the Alton & Southern, the Illinois Transfer, the Venice & Carondelet Belt, the Pennsylvania, the Terminal (three times) and the Big Four at grade and ends at a connection with the Wiggins Ferry on the Mississippi River front.

The B. & O. has 2.4 per cent of the east side industries on its rails; 0.5 per cent of all the industries in the St. Louis-East St. Louis switching limits. It also has some team tracks and a freight house on the East St. Louis river front north of the Eads Bridge, through which it handles all St. Louis and East St. Louis and connecting line l. c. l. freight. It has no facilities in St. Louis.

The B. & O. operates the Cone Yard east of Relay Depot, where its engine facilities are located, and the Lower yard near the river front. Inbound freight trains are received and broken up in the Cone Yard, with the exception of one westbound merchandise train, which is broken up near the freight house on the river front to expedite the setting of inbound l. c. l. freight. In Cone Yard inbound trains are broken up and freight is classified for delivery to:

Louisville & Nashville,
East St. Louis Yard of Terminal,
Wiggins Ferry on river front,
Madison Yard for Merchants Bridge Terminal,

Chicago, Burlington & Quincy—East,
Chicago & Alton,
Southern,
East St. Louis Junction,
Alton & Southern,
Baltimore & Ohio Freight House,
Industries on Baltimore & Ohio,
Baltimore & Ohio team tracks.

Cars for other railroads are moved by B. & O. engines to receiving tracks of the other companies. Generally speaking, the engines return light. In interchange with the Merchants, the Southern and the Alton & Southern, however, the B. & O. tries to time its deliveries so that its engines will bring back cars, which, however, is not always possible.

The Wiggins Ferry Co. and the Chicago & Alton deliver cars to the B. & O. in the lower yard; the Alton & Southern, Merchants Bridge Terminal and Southern deliver cars at the crossings of those lines; all other roads deliver their freight at the Cone Yard; the engines of those roads, with the exception of the Alton & Southern and the Southern, generally return light to their own lines.

House freight, team track freight and industrial freight loaded and unloaded on its own lines is handled outside of the Cone Yard by switch engines, which deliver from Cone Yard on inbound and assemble there for outbound.

Outbound trains are made up in the Cone Yard.

During October, 1920, the B. & O. handled the following carload business, including cars loaded and unloaded at its freight house:

549 carloads in for unloading on own lines,
11.4 per cent of its inbound,
4,292 carloads in for delivery to other lines,
88.6 per cent of its inbound,
546 carloads loaded locally for other lines,
264 carloads from other lines unloaded locally,
449 carloads out loaded on own lines, 9.9 per cent of its outbound,
4,079 carloads out from other lines, 90.1 per cent of its outbound,

10,179 carloads (not including empty cars), 3.7 per cent of all St. Louis-East St. Louis carloads.

During the week of October 18-23, 1920, the B. & O. handled the following l. c. l. business:

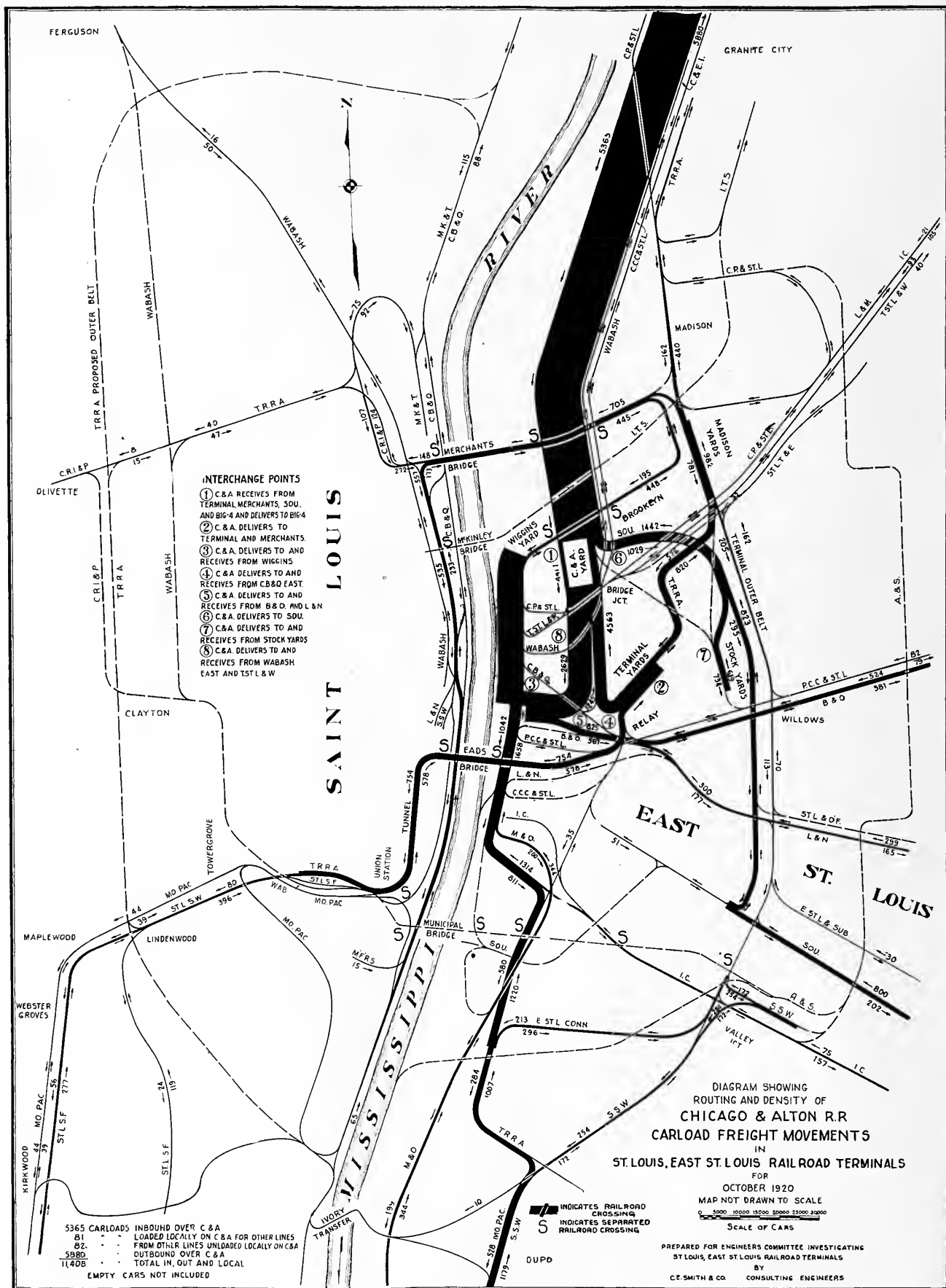


Fig. 38—Carload Freight Diagram—C. & A. R. R.

Local:

Inbound 326 tons, 4.3 per cent of all inbound local.

Outbound 670 tons, 3.2 per cent of all outbound local.

Connecting Line:

Inbound 661 tons, 9.5 per cent of all inbound connecting line.

Outbound 153 tons, 2.2 per cent of all outbound connecting line.

Total l. c. l. 1,810 tons, 4.3 per cent of the total l. c. l. freight handled through St. Louis-East St. Louis freight houses.

Chicago & Alton Railroad

The Chicago & Alton enters East St. Louis from the north through Granite City and Madison. It crosses at grade the C. P. & St. L. at Granite City, the Venice & Carondelet Belt of the Southern Railway at Venice and the C. P. & St. L., T. St. L. & W., Wabash and C. B. & Q. near Bridge Junction; it ends at a connection with the Wiggins Ferry on the river front.

The C. & A. maintains some team tracks and a freight station on the East St. Louis river front, in which it handles all St. Louis and East St. Louis and connecting line l. c. l. freight. The C. & A. has 0.7 per cent of the east side industries on its rails; 0.1 per cent of all the industries within the St. Louis-East St. Louis switching limits. It has no facilities in St. Louis.

Between East Alton and Bridge Junction the single track main line of the C. & A. forms the southbound main of a double track of which the C. C. C. & St. L. track forms the other; this double track line is used by the C. & A., C. C. C. & St. L., C. B. & Q., and C. & E. I.

The C. & A. operates the Venice Yard, where its engine terminals are located, the Brooklyn Yard, the Middle Yard near Bridge Junction, and the Lower Yard near the river front.

Inbound C. & A. freight trains are received and broken up in the Venice Yard. In this yard inbound trains are broken up and freight is classified for delivery to:

Southern,
East St. Louis Junction,
Cleveland, Cincinnati, Chicago and St. Louis,
Wabash—East,
Toledo, St. Louis & Western,
East St. Louis Yard of Terminal,

Madison Yard for Merchants,
Wiggins Ferry,
Terminal R. R. at Granite City,
Chicago, Burlington & Quincy, East,
Baltimore & Ohio,
Louisville & Nashville,
Missouri Pacific—Twenty-third Street, St. Louis,
St. Louis, Troy & Eastern,
C. & A. Freight House,
Industries on C. & A.,
C. & A. team tracks.

Cars for other railroads are moved by C. & A. engines to interchange tracks of other companies, with two exceptions. In interchange with the Merchants, the C. & A. engines deliver to the C. D. Yard at Relay, and bring back cars for the C. & A. The same arrangement applies to the Missouri Pacific in St. Louis. All cars for Wiggins Ferry are taken by C. & A. engines to the Wiggins Yard on the river front. Engines return light, with the exception of interchanges with the Merchants, Missouri Pacific, B. & O., & L. & N.

All roads, except the Merchants, Mo. Pac., and East St. Louis Junction deliver their interchange freight in the Brooklyn, Bridge Junction, and Lower Yards. Engines of other roads return light to their own lines. The East St. Louis Junction delivers on a designated interchange track in the Stock Yards.

The C. & A. house freight and team track freight loaded and unloaded is handled between Venice and the Lower Yard by its own switch engines. All industrial freight loaded and unloaded on its lines is handled in the Venice and Lower Yards by switch engines which deliver from the yard on inbound and assemble there for outbound. Outbound trains are made up in the Brooklyn and Lower Yard.

The C. & A. has recently made arrangements for interchange with the Mo. Pac., in the Mill Creek Valley, St. Louis, by means of its own power, C. & A. engines delivering cars to the Mo. Pac. and bringing back cars for the C. & A. It has also arranged an interchange with the Terminal at Granite City for the expeditious delivery of iron ore to the St. Louis Coke & Chemical Co.

During October, 1920, the C. & A. handled

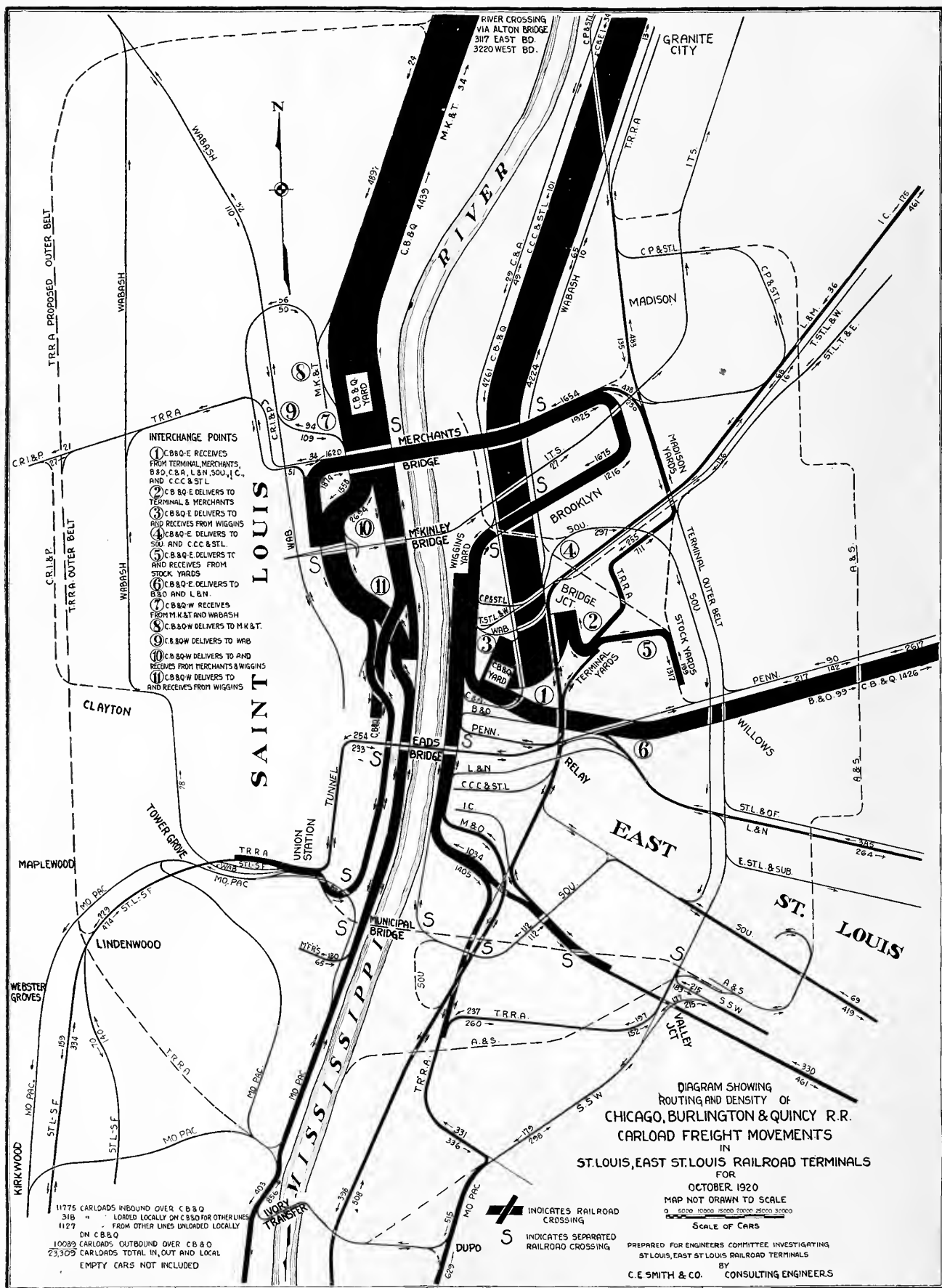


Fig. 39—Carload Freight Diagram—C. B. & Q. R. R.

the following carload business, including cars loaded and unloaded at its freight house:

- 460 carloads inbound for unloading on own lines, 8.6 per cent of its inbound.
- 4,905 carloads inbound for delivery to other lines, 91.4 percent of its inbound.
- 81 carloads loaded locally for other lines.
- 82 carloads from other lines unloaded locally.
- 433 carloads out loaded on own lines, 7.4 per cent of its outbound.
- 5,447 carloads out from other lines, 92.6 per cent of its outbound.

11,408 carloads (not including empty cars).

4.1 per cent of all St. Louis-East St. Louis Carloads.

During the week of October 18-23, 1920, the C. & A. handled the following l. c. l. business:

Local:

Inbound 511 tons, 6.8 per cent of all inbound local.

Outbound 520 tons, 2.5 per cent of all outbound local.

Connecting Line:

Inbound 282 tons, 4.0 per cent of all inbound connecting line.

Outbound 141 tons, 2.0 per cent of all outbound connecting line.

Total l. c. l. 1,454 tons, 3.5 per cent of the total l. c. l. freight handled through the St. Louis-East St. Louis freight houses.

Chicago, Burlington & Quincy R. R.

The C. B. & Q. enters St. Louis over one line and East St. Louis over two lines.

The St. Louis line enters from the north over the Missouri River Bellefontaine Bridge. It follows the north St. Louis river front to North Market street, where it swings west across the tracks of the St. Louis Merchants Bridge Terminal and the Wabash into First street, which it occupies to the south end of its line at Franklin avenue.

The C. B. & Q. has a large modern yard and engine terminals in North St. Louis just north of the Merchants Bridge; it has a large team track layout at the north end of the freight house district between Tyler street and Mullanphy street; also a freight station and team tracks at the south end of its line at Franklin avenue, where it handles practically all its St. Louis and connecting line l. c. l. freight.

On the east side the C. B. & Q. enters East Alton from the north over its own rails; between East Alton and Bridge Junction it uses the double track line formed by the tracks of the C. & A. and C. C. C. & St. L.; at Bridge Junction it crosses the C. P. & St. L., T. St. L. & W., Wabash, and C. & A., and swings to the west to a connection with the Wiggins Ferry on the river front.

The C. B. & Q. also enters East St. Louis from the east over the B. & O. to Relay Depot, where it leaves the B. & O. and uses its own rails across the Terminal and C. C. C. & St. L. to a connection with its tracks from the north near Bridge Junction.

Near the junction of these two lines the C. B. & Q. has its east side freight yard and engine terminals. Also a freight house in which, however, it handles only a small part of its business, principally East St. Louis l. c. l. freight.

The C. B. & Q. also has operating rights over the Alton Bridge between West Alton and Alton, and over the Illinois Terminal Railroad, between Alton and East Alton, which enables it to operate its own trains between St. Louis and East St. Louis.

In St. Louis the C. B. & Q. has 2.6 per cent of the industries on its lines; in East St. Louis it has none; its St. Louis industries are 2.2 per cent of all the industries within the St. Louis-East St. Louis switching limits.

C. B. & Q.—East:

Inbound C. B. & Q. (East) freight trains from both lines are received in its yard between Bridge Junction and the river front. In this yard inbound trains are broken up and freight is classified for delivery to:

- Baltimore & Ohio,
- Chicago & Alton,
- Illinois Central,
- Louisville & Nashville,
- Cleveland, Cincinnati, Chicago & St. Louis,
- East St. Louis Yard of Terminal,
- Wiggins Ferry,
- Madison Yard,
- Southern,
- East St. Louis Junction,
- C. B. & Q. Freight House and Team Tracks (E. St. Louis).

Each of the classifications for other railroads

is moved by C. B. & Q. engines to interchange tracks of the other companies, except the Wiggins Ferry and Southern, which come to the C. B. & Q. Yard. Engines return light after making deliveries.

In the opposite direction other roads deliver their interchange freight in the C. B. & Q. Yard and the engines of those roads return light to their own lines, except the Wiggins Ferry and Southern.

C. B. & Q. (East) house freight and team track freight is handled by switch engines which deliver from this yard in inbound and assemble there for outbound movement.

Outbound trains are made up in this yard.

C. B. & Q.—West:

Inbound C. B. & Q. (West) freight trains are received in its North St. Louis Yard north of the Merchants Bridge. In this yard inbound trains are broken up and freight is classified for delivery to:

Missouri, Kansas & Texas,
Wabash (West),
Merchants Bridge Terminal,
Wiggins Ferry,
C. B. & Q. (West) Freight House,
Industries on C. B. & Q.,
C. B. & Q. Team Tracks.

Each of the classifications for other roads is moved by C. B. & Q. engines to interchange tracks of the other companies. Engines return light after making deliveries.

In the opposite direction other roads deliver their interchange freight in the C. B. & Q. Yard, except in some instances the Wiggins Ferry delivers at Mound street. Engines of other roads return light to their own lines.

C. B. & Q. house freight, team track freight and industrial freight loaded and unloaded on its own lines is handled outside of its yard by switch engines which deliver from there on inbound and assemble there for outbound movement. All C. B. & Q. (West) outbound trains are made up in its North St. Louis Yard.

In addition to the routes controlled by the Terminal Railroad Association, for the transfer of cars across the river, the C. B. & Q. makes considerable use of the Alton Bridge for movements between the Hannibal Division, north

of St. Louis, and the Paducah Division, east of East St. Louis, and also connections with other roads in East St. Louis.

It also uses the Alton Bridge to the extent of several hundred cars a month in each direction between North St. Louis and East St. Louis. Carloads making the latter movement are generally cars loaded at the Burlington Elevator and industries in North St. Louis, or held in St. Louis for reconsignment and later consigned to connecting lines in East St. Louis. In the opposite direction the movement consists of carloads delivered to the C. B. & Q. (East) by trunk lines for delivery to North St. Louis industries on the C. B. & Q.

Notwithstanding the distance of about forty miles between North St. Louis and East St. Louis by the Alton Bridge, as compared with about three miles by the Merchants Bridge, the Burlington chooses the Alton Bridge route because it is much quicker and cheaper than the movement by the Terminal Railroad Association. The round trip over the Alton Bridge is made within eight hours. Including this local movement and the through movement, more than 6,000 carloads moved over the Alton Bridge during October, 1920, which is one and one-half times as many as passed between the C. B. & Q. and other roads via all river crossings at St. Louis.

During October, 1920, the C. B. & Q. handled the following carload business, including cars loaded and unloaded at its freight houses:

1,708 carloads in for unloading on own lines,	
14.6 per cent of its inbound,	
10,067 carloads in for delivery to other lines,	
85.4 per cent of its inbound,	
318 carloads loaded locally for other lines,	
1,127 carloads from other lines unloaded locally.	
2,342 carloads out loaded on own lines,	23.2
per cent of its outbound,	
7,747 carloads out from other lines,	76.8
per cent of its outbound,	

23,309 carloads (not including empty cars).

8.4 per cent of all St. Louis-East St. Louis carloads.

During the week of October 18-23, 1920, the C. B. & Q. handled the following l. c. l. business:

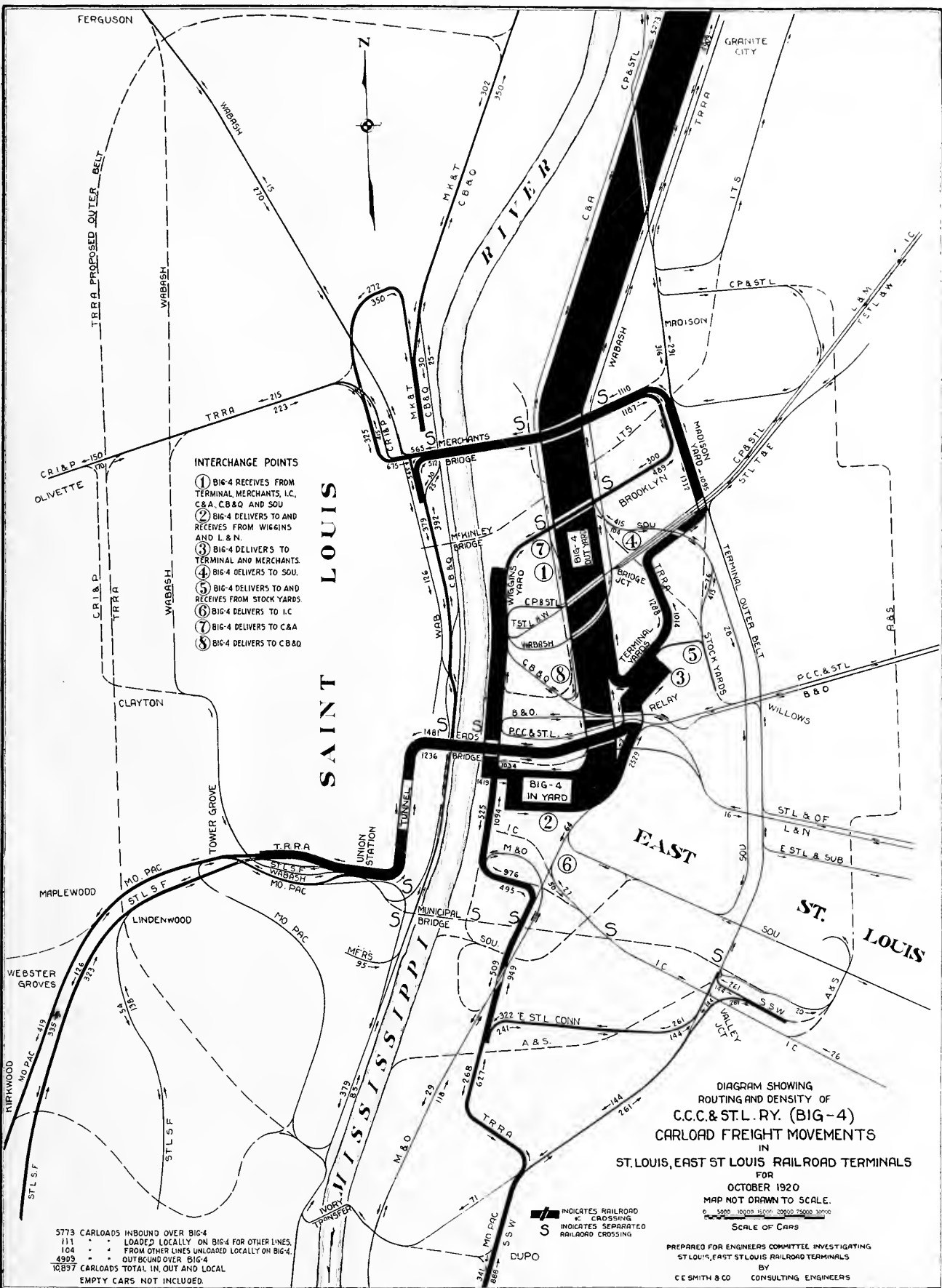


Fig. 40—Carload Freight Diagram—C. C. C. & St. L. Ry.

Local:

Inbound 566 tons, 7.5 per cent of all inbound local,

Outbound 2,084 tons, 10.1 per cent of all outbound local.

Connecting Line:

Inbound 356 tons, 5.1 per cent of all inbound connecting line,

Outbound 468 tons, 6.7 per cent of all outbound connecting line.

Total l. c. l. 3,474 tons, 8.2 per cent of the total l. c. l. freight handled in all St. Louis-East St. Louis freight houses.

Cleveland, Cincinnati, Chicago & St. Louis Railway

The Cleveland, Cincinnati, Chicago & St. Louis Railway enters East St. Louis from the north through Granite City and Madison. It crosses the Venice and Carondelet Belt, the C. P. & St. L. (twice), T. St. L. & W., Wabash, C. B. & Q., B. & O., Pennsylvania, Eads Bridge Approach, and L. & N. at grade. The C. C. C. & St. L. has 2.1 per cent of the east side industries on its rails; 0.4 per cent of all the industries in the St. Louis-East St. Louis switching limits.

The C. C. C. & St. L. has a small yard at Brooklyn, north of Bridge Junction, and a larger yard with engine terminals south of the Eads Bridge. Its rails end at a connection with the Wiggins Ferry on the river front. At this point it has team tracks and a freight station in which it handles all its St. Louis, East St. Louis and connecting line l. c. l. freight. It has no facilities in St. Louis.

Inbound C. C. C. & St. L. freight trains are received and broken up in the Lower Yard. In this yard cars are classified for delivery to:

East St. Louis Yard of Terminal,
Madison Yard for Merchants,
Wiggins Ferry,
Louisville & Nashville,
Illinois Central,
Chicago, Burlington & Quincy—East,
Chicago & Alton,
East St. Louis Junction,
Southern,
C. C. C. & St. L. Freight House,
Industries on C. C. C. & St. L.,
C. C. C. & St. L. Team Tracks.

Each of the classifications for other railroads is moved by C. C. C. & St. L. engines to receiving tracks, except the Wiggins Ferry,

which receives in the Lower Yard. Generally speaking, engines return light, after making deliveries to receiving tracks.

Except for the Wiggins Ferry and L. & N., which deliver to the C. C. C. & St. L. in the Lower Yard, all other roads deliver their interchange freight at the outbound yard just north of Bridge Junction and the engines of those roads generally return light to their own lines.

All outbound trains are made up in the Brooklyn Yard north of Bridge Junction.

During October, 1920, the C. C. C. & St. L. handled the following carload business, including cars loaded and unloaded at its freight house:

2,034	carloads in for unloading on own lines,
	35.3 per cent of its inbound,
3,739	carloads in for delivery to other lines,
	64.7 per cent of its inbound,
111	carloads loaded locally for other lines,
104	carloads from other lines unloaded locally,
560	carloads out loaded on own lines, 11.2
	per cent of its outbound,
4,349	carloads out from other lines, 88.8 per
	cent of its outbound,

10,897 carloads (not including empty cars).

3.9 per cent of all St. Louis-East St. Louis carloads.

During the week of October 18-23, 1920, the C. C. C. & St. L. handled the following l. c. l. business:

Local:

Inbound 971 tons, 12.9 per cent of all inbound local,

Outbound 800 tons, 3.9 per cent of all outbound local.

Connecting Line:

Inbound 944 tons, 13.6 per cent of all inbound connecting line,

Outbound 130 tons, 1.9 per cent of all outbound connecting line.

Total l. c. l. 2,845 tons, 6.8 per cent of all l. c. l. freight handled in St. Louis-East St. Louis freight houses.

Chicago and Eastern Illinois Railroad

The Chicago & Eastern Illinois enters the east side from the north over the C. C. C. & St. L. At Mitchell, five miles north of Granite City, the C. & E. I. has a freight yard and engine facilities. Between Granite City and Twenty-third street, St. Louis, the C. & E. I. handles trains with its own engines over the

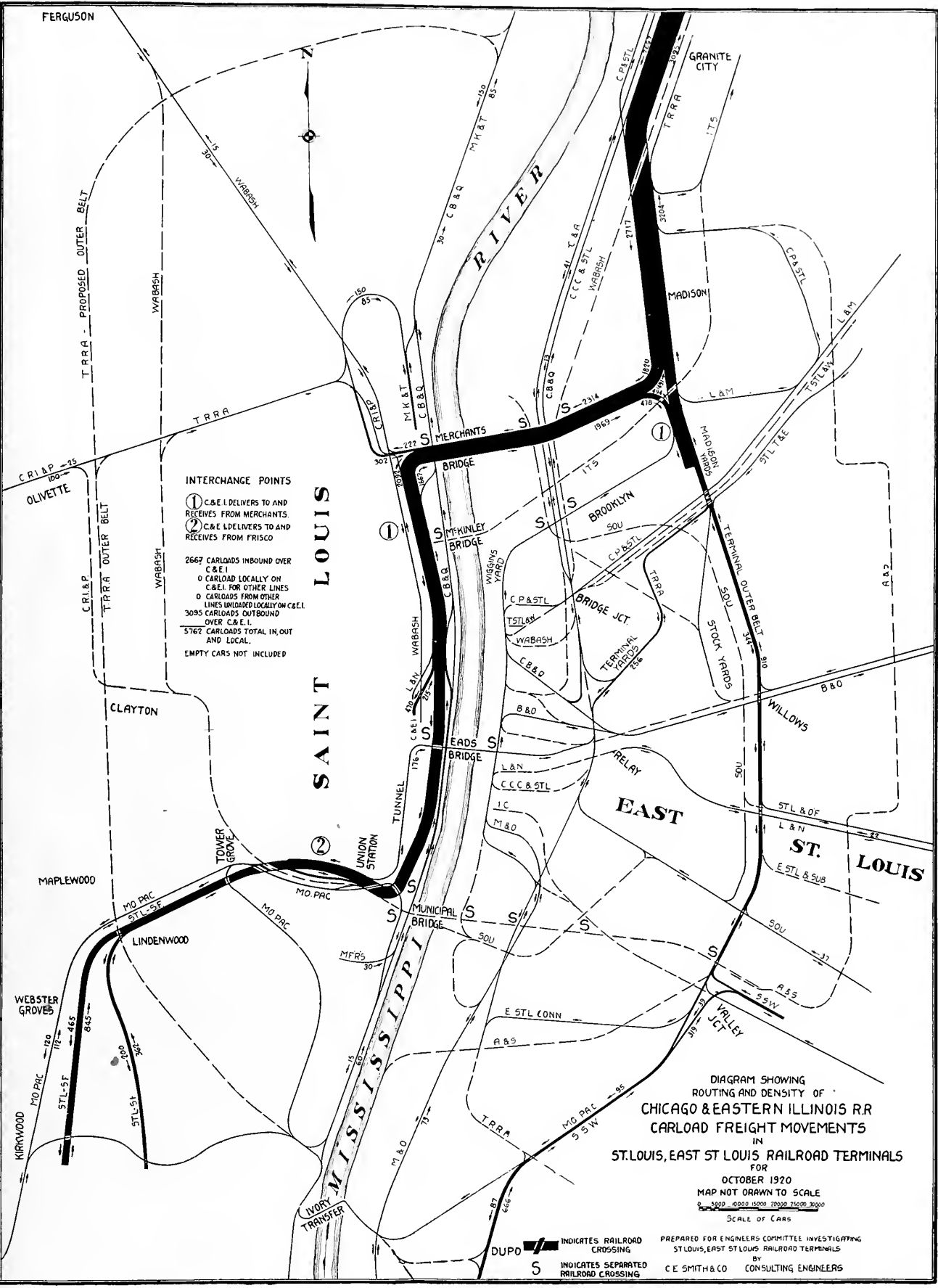


Fig. 41—Carload Freight Diagram—C. & E. I. R. R.

Merchants Bridge and the Terminal Railroad Association, into the yard of the St. Louis-San Francisco, with which it interchanges direct.

Although an east side line, the C. & E. I. has no freight house in East St. Louis. It has no industries on its lines either in St. Louis or East St. Louis. Jointly with the St. L.-S. F. and the C. R. I. & P., it has an off-line freight station on Broadway at Biddle street, where it handles St. Louis, East St. Louis and connecting line l. c. l. freight, and off-line team tracks at Brooklyn street, St. Louis. These connect with and are switched by the Terminal Railroad Association.

Inbound C. & E. I. freight is handled in its Mitchell Yard. In this yard, with the exception of one train inbound, which goes through to the St. L.-S. F. Yard in St. Louis, trains are broken up and cars are classified and delivered with its own engines to the Merchants Bridge Terminal at Madison Yard, with the following exceptions:

Cars for the St. L.-S. F. Railroad, with which line the C. & E. I. interchanges direct at the St. L.-S. F. Tower Grove and Lindenwood Yards, St. Louis; cars for the C. & E. I. Freight House and Team Track Yard at St. Louis, and all St. Louis industries, which are delivered to the Terminal Railroad Association at the Bremen Avenue Yard, St. Louis.

The C. & E. I. receives and handles with its own engines from the St. L.-S. F. at the Tower Grove Yard, and from the Terminal Railroad Association at Madison Yard all cars for the C. & E. I.

Merchandise from the St. Louis Freight House and carload freight from its St. Louis team tracks is received from the Terminal Railroad Association at Tyler Street Yard, and handled from that point to Mitchell Yard in C. & E. I. trains.

With the exception of two trains, outbound trains are made up in Mitchell Yard.

One inbound train runs right through the Mitchell Yard to the St. Louis-San Francisco Tower Grove Yard in St. Louis, and two outbound trains are made up there.

During October, 1920, the C. & E. I. handled the following carload business, including

cars loaded and unloaded at its freight house:

470 carloads in for unloading on own lines,
17.6 per cent of its inbound,
2,197 carloads in for delivery to other lines,
82.4 per cent of its inbound,
0 carloads loaded locally for other lines,
0 carloads from other lines unloaded locally,
215 carloads out loaded on own lines, 6.9 per cent of its outbound.
2,880 carloads out from other lines, 93.1 per cent of its outbound.

5,762 carloads (not including empty cars),

2.1 per cent of all St. Louis-East St. Louis carloads.

During the week of October 18-23, 1920, the C. & E. I. handled the following l. c. l. business:

Local:

Inbound 267 tons, 3.5 per cent of all inbound local,
Outbound 295 tons, 1.4 per cent of all outbound local,

Connecting Line:

Inbound 124 tons, 1.8 per cent of all inbound connecting line.
Outbound 103 tons, 1.5 per cent of all outbound connecting line,
Total l. c. l. 789 tons, 1.9 per cent of the total l. c. l. freight handled in St. Louis-East St. Louis freight houses.

Chicago, Peoria and St. Louis Railroad

The Chicago, Peoria & St. Louis enters East St. Louis from the north through Granite City and Madison. It crosses the C. & A., C. C. C. & St. Louis, Wabash and Terminal at Granite City, the Terminal at Madison (twice), and the V. & C. Belt, the Wabash (twice), C. C. C. & St. L. and C. & A. at Bridge Junction.

It has a yard, engine facilities and freight house between Bridge Junction and the river front, where it ends at a connection with the Wiggins Ferry Co. The C. P. & St. L. has 3.6 per cent of the east side industries on its rails; 0.7 per cent of all the industries in the St. Louis-East St. Louis switching limits. It has no facilities in St. Louis.

Inbound C. P. & St. L. freight trains are received in the Lower Yard on the river front.

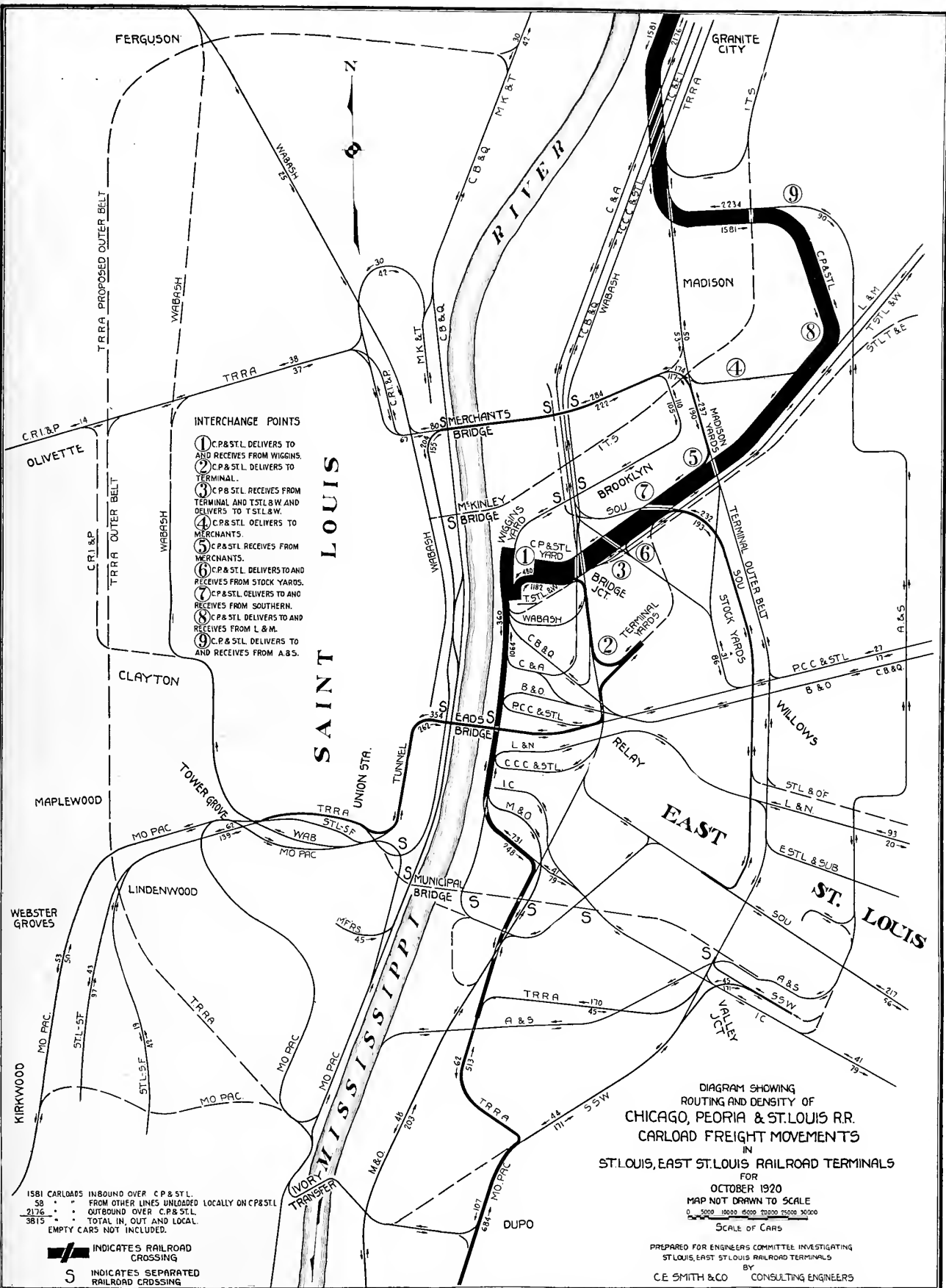


Fig. 42—Carload Freight Diagram—C. P. & St. L. R. R.

In this yard inbound trains are broken up and freight is classified for delivery to:

Wiggins Ferry,
East St. Louis Yard of Terminal,
Madison Yard for Merchants,
East St. Louis Junction,
Southern,
Litchfield & Madison,
Alton & Southern,
Toledo, St. Louis & Western,
C. P. & St. L. Freight House,
Industries on C. P. & St. L.,
C. P. & St. L. Team Tracks.

Each of the classifications for other companies is moved by C. P. & St. L. engines to interchange tracks of the other companies. Generally speaking, engines return light.

The Wiggins delivers its interchange freight for the C. P. & St. L. in the Lower Yard. All other roads deliver at designated interchange tracks near the junctions of their roads with the C. P. & St. L. The engines of these roads generally return light to their own lines.

The C. P. & St. L. house freight and team track freight, loaded and unloaded on its lines, is handled outside of the Lower Yard by switch engines which deliver from this yard on inbound and assemble there for outbound.

All industrial freight loaded and unloaded on its lines in Madison and Granite City is handled outside of the Lower Yard by switch engines and is set out at these industries on inbound movement and picked up at these industries on outbound movement without going to the Lower Yard. All C. P. & St. L. outbound trains are made up in the Lower Yard.

During October, 1920, the C. P. & St. L. handled the following carload business, including cars loaded and unloaded at its freight house:

128 carloads in for unloading on own lines,
8.1 per cent of its inbound,
1,453 carloads in for delivery to other lines,
91.9 per cent of its inbound,
0 carloads loaded locally for other lines,
58 carloads from other lines unloaded locally,
278 carloads out loaded on own lines, 12.8 per cent of its outbound,
1,898 carloads out from other lines, 87.2 per cent of its outbound.

3,815 carloads (not including empty cars).

1.4 per cent of all St. Louis-East St. Louis carloads.

During the week of October 18-23, 1920, the C. P. & St. L. handled the following l. c. l. business:

Local:

Inbound 113 tons, 1.5 per cent of all inbound local,
Outbound 80 tons, 0.4 per cent of all outbound local.

Connecting Line:

Inbound 69 tons, 1.0 per cent of all inbound connecting line,
Outbound 63 tons, 0.9 per cent of all outbound connecting line.

Total l. c. l. 325 tons, 0.8 per cent of the total l. c. l. freight handled in all St. Louis-East St. Louis freight houses.

Chicago, Rock Island and Pacific Railroad

The Chicago, Rock Island & Pacific enters St. Louis from the west over its own line to Forest Park where it connects with the Wabash and uses the tracks of the latter to Union Station.

At Olivette, near the northwest city limits, it connects with the Terminal Outer Belt and uses it to Carrie avenue, North St. Louis, near the west end of the Merchants Bridge Approach, where the C. R. I. & P. has a modern yard and engine terminals.

The C. R. I. & P. has 1.1 per cent of the St. Louis industries on its rails; 0.9 per cent of all the industries within the St. Louis-East St. Louis switching limits. Jointly with the St. L.-S. F. and the C. & E. I., it has a freight station on Broadway at Biddle street, where it handles all its St. Louis and East St. Louis and connecting line l. c. l. freight, and team tracks at Brooklyn street. It has no facilities in East St. Louis.

Inbound C. R. I. & P. freight trains are received and broken up in the Carrie Avenue Yard in North St. Louis. In this yard cars are classified for delivery to:

St. Louis Merchants Bridge Terminal Ry.,
C. R. I. & P. Freight House and Team Tracks.

The tracks for interchange with the Merchants Bridge Terminal are in the Carrie Avenue Yard, where the Terminal engines receive and deliver all cars including those to and from the C. R. I. & P. freight house and team tracks.

All C. R. I. & P. outbound trains are made up in the Carrie Avenue Yard.

During October, 1920, the C. R. I. & P. handled the following carload business, including cars loaded and unloaded at its freight house:

- 154 carloads in for unloading on own lines, 5.9 per cent of its inbound,
- 2,473 carloads in for delivery to other lines, 94.1 per cent of its inbound,
- 92 carloads loaded locally for other lines,
- 169 carloads from other lines unloaded locally,
- 536 carloads out loaded on own lines, 21.4 per cent of its outbound,
- 1,976 carloads out from other lines, 78.6 per cent of its outbound,

5,400 carloads (not including empty cars),
2.0 per cent of all St. Louis-East St. Louis carloads.

During the week of October 18-23, 1920, the C. R. I. & P. handled the following l. c. l. business:

Local:

- Inbound 126 tons, 1.7 per cent of all inbound local,
- Outbound 545 tons, 2.6 per cent of all outbound local.

Connecting Line:

- Inbound 61 tons, 0.9 per cent of all inbound connecting line,
- Outbound 266 tons, 3.8 per cent of all outbound connecting line.
- Total l. c. l. 998 tons, 2.4 per cent of the total l. c. l. freight handled in all St. Louis-East St. Louis freight houses.

East St. Louis and Suburban Railway

The East St. Louis & Suburban Railway Company, in addition to operating an interurban electric car service, also serves a number of coal mines in the inner group of mines east of East St. Louis, on the Lebanon Branch and on the St. Louis & Belleville Electric Railway. The traffic on both lines consists almost entirely of coal from the mines to connections in East St. Louis and empty coal cars returning to the mines.

Coal loaded on the Lebanon Branch is handled to a connection with the St. Louis & O'Fallon Railway which handles the coal into East St. Louis.

St. Louis and Belleville Electric Railroad Co.

(East St. Louis and Suburban Railway.)

The St. Louis & Belleville Electric crosses the A. & S. and the Illinois Transfer Railway at grade and ends at a connection with the V. & C. Belt.

Inbound Belleville Electric freight is received in its yard at State street. In this yard freight is classified for delivery to:

- St. Louis Merchants Bridge Terminal Ry. (Illinois Transfer),
- Southern (V. & C. Belt),
- Alton & Southern.

For Team Tracks on Belleville Electric.

Each of these classifications is moved by Belleville Electric engines to receiving tracks of the above companies.

All roads deliver their interchange freight to the Belleville Electric on designated interchange tracks where the roads connect.

All Belleville Electric road trains are broken up and made up in the Belleville Electric yards at Twenty-first and State streets, East St. Louis, Illinois.

During October, 1920, the East St. Louis and Suburban handled the following carload business:

- 2,824 carloads inbound,
- 0 carloads outbound.

2,824 carloads (not including empty cars).
1.1 per cent of all St. Louis-East St. Louis carloads.

During the week of October 18-23, 1920, the East St. Louis and Suburban handled the following l. c. l. business:

Local:

- Inbound 60 tons, 0.8 per cent of all inbound local.
- Outbound 281 tons, 1.4 per cent of all outbound local,

Connecting Line:

- Inbound 0 tons.
- Outbound 0 tons.
- Total l. c. l. 341 tons, 0.8 per cent of total l. c. l. freight handled in all St. Louis-East St. Louis freight houses.

East St. Louis Junction Railroad

The East St. Louis Junction Railroad is the Stock Yards Terminal railroad serving also

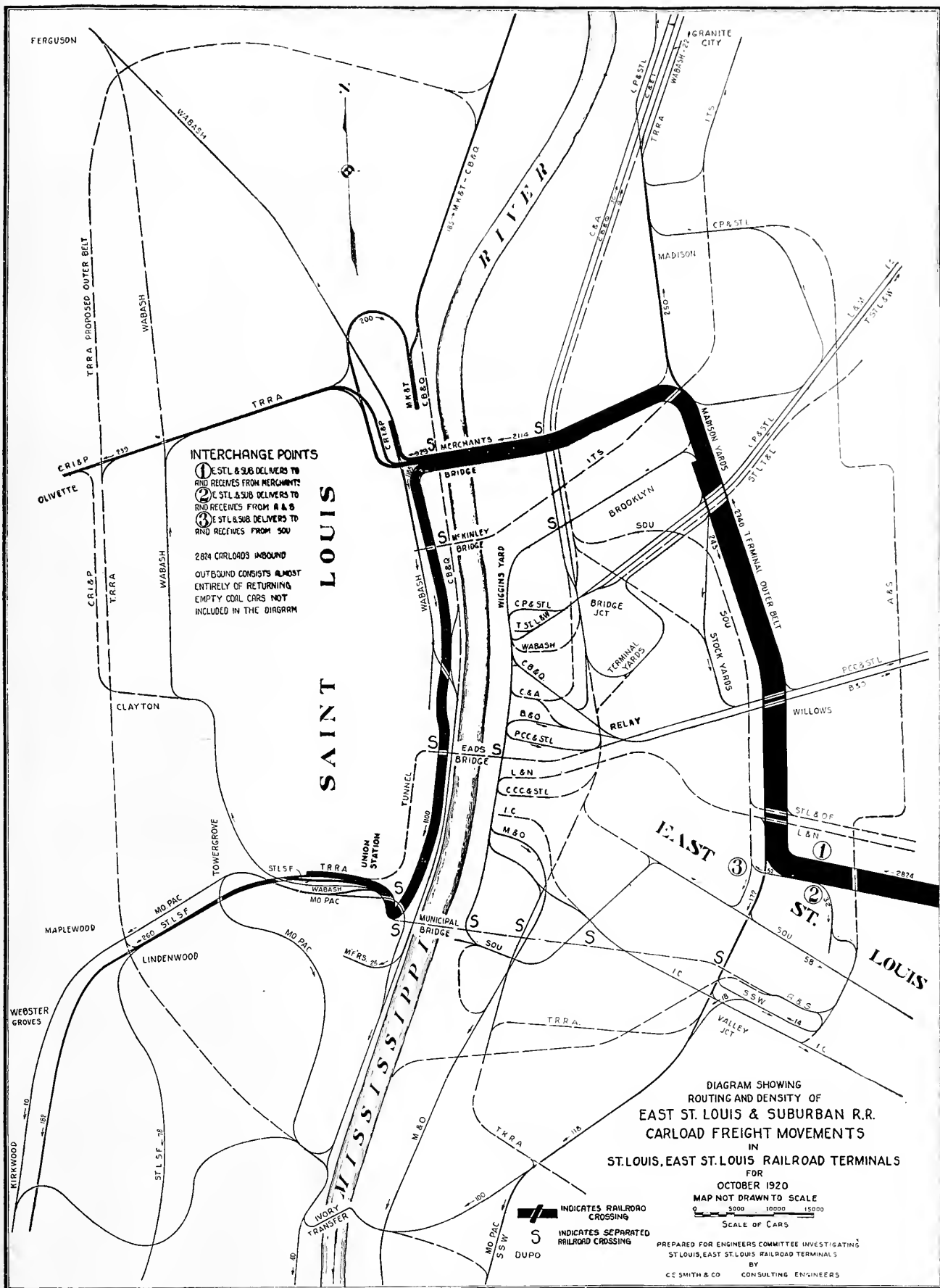


Fig. 44—Carload Freight Diagram—E. St. L. & Sub. R. R.

the packing houses. It is not a trunk line nor a transfer line.

All freight to and from the East St. Louis Junction is classified in their yard at the National Stock Yards. In this yard freight is received and classified for delivery to:

St. Louis, Troy & Eastern,
Toledo, St. Louis & Western,
Chicago, Peoria & St. Louis,
Illinois Central,
Wabash,
Southern,
Cleveland, Cincinnati, Chicago & St. Louis,
Chicago & Alton,
West Side Roads via Merchants Bridge Terminal,
St. Louis-Southwestern via Merchants Bridge Terminal,
Chicago & Eastern Illinois via Merchants Bridge Terminal,
Missouri Pacific, Dupo. via Merchants Bridge Terminal,
Pennsylvania,
Wiggins Ferry,
Merchants Bridge Terminal,
Baltimore & Ohio,
Louisville & Nashville,
Mobile & Ohio,
Chicago, Burlington & Quincy—East,
West Side Roads via Terminal,
Industries on the East St. Louis Jct.

Cars for the Wabash, Southern, Pennsylvania, Wiggins, Merchants Bridge Terminal, and C. P. & St. L. are moved by East St. Louis Junction engines to designated receiving tracks of those roads, the engines returning light. All cars from those roads and all cars to and from all other roads are received and delivered on designated tracks in the Stock Yards. On about 50 per cent of the interchange the engines of all roads delivering to the East St. Louis Junction Railway return light to their own lines, and when receiving from the East St. Louis Junction Railway proceed to the Stock Yards with light engines; on the remaining 50 per cent engines are loaded in both directions.

The East St. Louis Junction Railway does not handle any l. c. l. business. It has no facilities in St. Louis.

During October, 1920, the East St. Louis Junction Railway handled the following carload business:

5,888 carloads loaded locally for other lines,
8,247 carloads from other lines unloaded locally,

14,135 carloads (not including empty cars).

Illinois Central Railroad

The Illinois Central Railroad enters East St. Louis from the north through Madison and Bridge Junction, and from the south through Valley Junction. It has operating rights over Terminal tracks from Bridge Junction to Broadway, which gives it a through line. The Illinois Central has no industries on its tracks. It has no facilities in St. Louis.

The I. C. has an old yard south of Broadway, another old yard further south, but north of Valley Junction known as the Old Yard or Lumber Yard, the New Yard south of Valley Junction, and a yard with freight houses and team tracks on the river front, known as the Island Yard. Its engine terminals are located between the Broadway Yard and the Lumber Yard.

Inbound Illinois Central freight from the south is received in its New Yard, located south of Valley Junction. Inbound I. C. freight from the north is received either in its Broadway Yard or in its Lumber Yard (Old Yard) north of Valley Junction, and some trains are run out into the New Yard, which is governed by the condition of the Broadway and Lumber yards, and the classification of loading in the trains.

Freight passing from the north line to the south line, and vice versa, is received in either the Broadway, Lumber or New yards governed by the condition of those yards and classification of loading in the trains.

The main interchange classification tracks are in the New Yard where cars are classified for direct deliveries to:

Alton & Southern,
St. Louis-Southwestern,
Missouri Pacific,
Southern,
Cleveland, Cincinnati, Chicago & St. Louis,
Louisville & Nashville,
Chicago, Burlington & Quincy—East,
East St. Louis Junction,
Wiggins Ferry,
Merchants Bridge Terminal,
Terminal Railroad Association,
Illinois Central Freight House and Team Tracks.

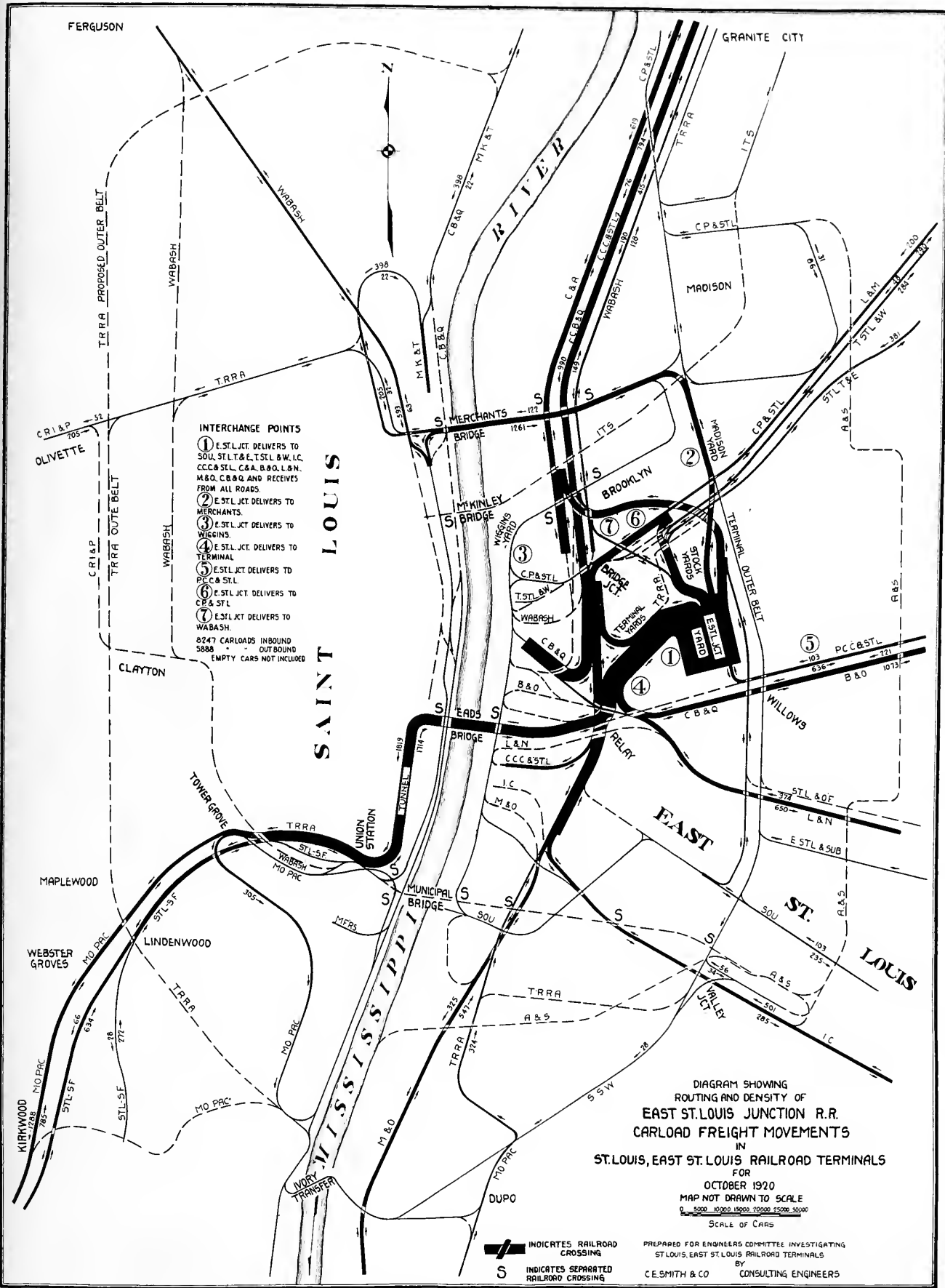


Fig. 45—Carload Freight Diagram—E. St. L. Jct. R. R.

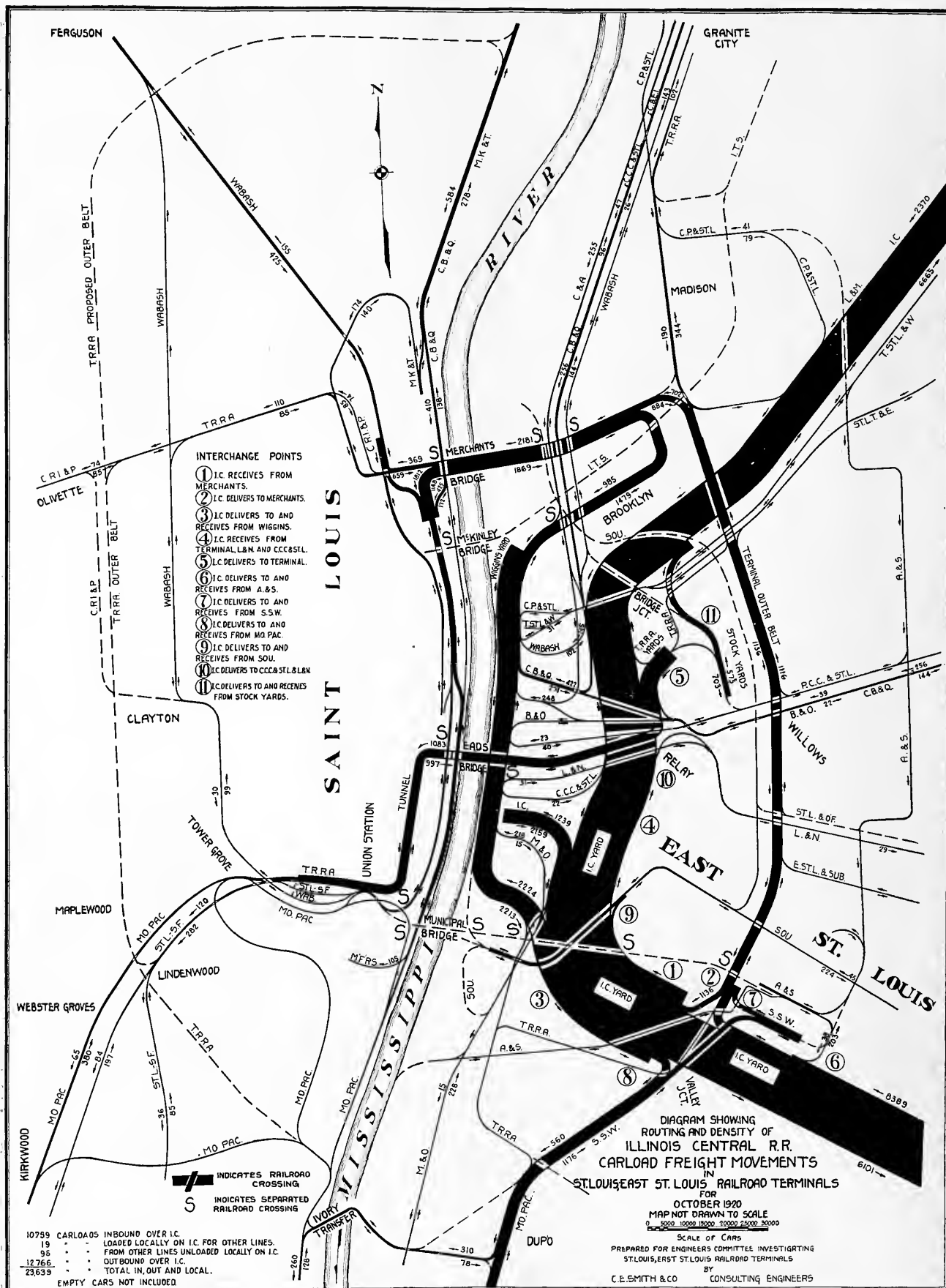


Fig. 46—Carload Freight Diagram—I. C. R. R.

Direct deliveries are also made to the Southern, Wiggins Ferry, Cleveland, Cincinnati, Chicago & St. Louis, and Louisville & Nashville from the Broadway and Island yards, which deliveries consist of reconsigned grain, perishable and other preferred cars, and also cars reconsigned from the team tracks in the Island Yard.

Each of these deliveries is made with I. C. engines to the yards or receiving tracks of the other companies, and, generally speaking, engines return light.

The A. & S., and St. L.-S. W. make their deliveries in the New Yard, the Missouri Pacific, the Southern and Wiggins Ferry make their deliveries in the Lumber Yard. The Merchants make their deliveries just north of Valley Junction on a connection with the Lumber Yard.

The T. R. R. A., C. C. C. & St. L. and L. & N. make their deliveries through the north end of the Broadway Yard. The East St. Louis Junction make their deliveries in their own yard which makes it necessary for the I. C. to send their own engines out for deliveries which consist principally of meat, livestock and empty equipment, which is handled into the Broadway Yard.

The engines of foreign lines making delivery to the I. C. as outlined above, return light to their own lines.

I. C. house freight and team track freight is handled from the different yards to the Island Yard and placed at the Inbound Freight House or on the team tracks for unloading.

The outbound loading from the freight house and team tracks is handled to the Broadway yards where it is assembled in trains. All I. C. road trains coming into East St. Louis, either from the south or north, are broken up and switched in the New Yard, Lumber Yard, and Broadway Yard, and outbound trains are made up in these different yards in the same way.

Southbound trains do not set out at Madison any freight destined to St. Louis or East St. Louis, but it is brought on into East St. Louis yards where it is switched and placed on the different connections.

During October, 1920, the I. C. handled the following carload business, including cars loaded and unloaded at its freight house:

1,236 carloads in for unloading on own lines,
11.2 per cent of its inbound,

9,523 carloads in for delivery to other lines,
88.8 per cent of its inbound,

19 carloads loaded locally for other lines,
95 carloads from other lines unloaded locally,

2,159 carloads out loaded on own lines, 16.9 per cent of its outbound,

10,607 carloads out from other lines, 83.1 per cent of its outbound,

23,639 carloads (not including empty cars).

8.6 per cent of all St. Louis-East St. Louis carloads.

During the week of October 18-23, 1920, the I. C. handled the following l. c. l. business:

Local:

Inbound 443 tons, 5.9 per cent of all inbound local,

Outbound 1,957 tons 9.5 per cent of all outbound local.

Connecting Line:

Inbound 277 tons, 4.0 per cent of all inbound connecting line,

Outbound 224 tons, 3.2 per cent of all outbound connecting line.

Total l. c. l. 2,901 tons, 6.9 per cent of total l. c. l. freight handled in all St. Louis-East St. Louis freight houses.

Illinois Traction System

The Illinois Traction System operates about 450 miles of electric interurban railway in Illinois, northeast of East St. Louis.

It owns a bridge across the Mississippi River at St. Louis and operates across the bridge and through Ninth street and Twelfth street, to within a block of Washington avenue, where it has a passenger station and a station for handling l. c. l. freight. It also has a freight yard east of Broadway in North St. Louis, where it delivers coal on team tracks and makes a connection with the Terminal Railroad Association.

The I. T. S. has 5.1 per cent of the east side industries; 0.3 per cent of the west side industries on its tracks, amounting to 1.2 per cent of all the industries within the entire St. Louis-East St. Louis switching limits.

Inbound Illinois Traction freight is received in their yard in Granite City. In this yard freight is classified for delivery to:

Merchants Bridge Terminal—East Side,
Merchants Bridge Terminal—West Side,
Southern,

I. T. S. St. Louis Freight House and Team Tracks.

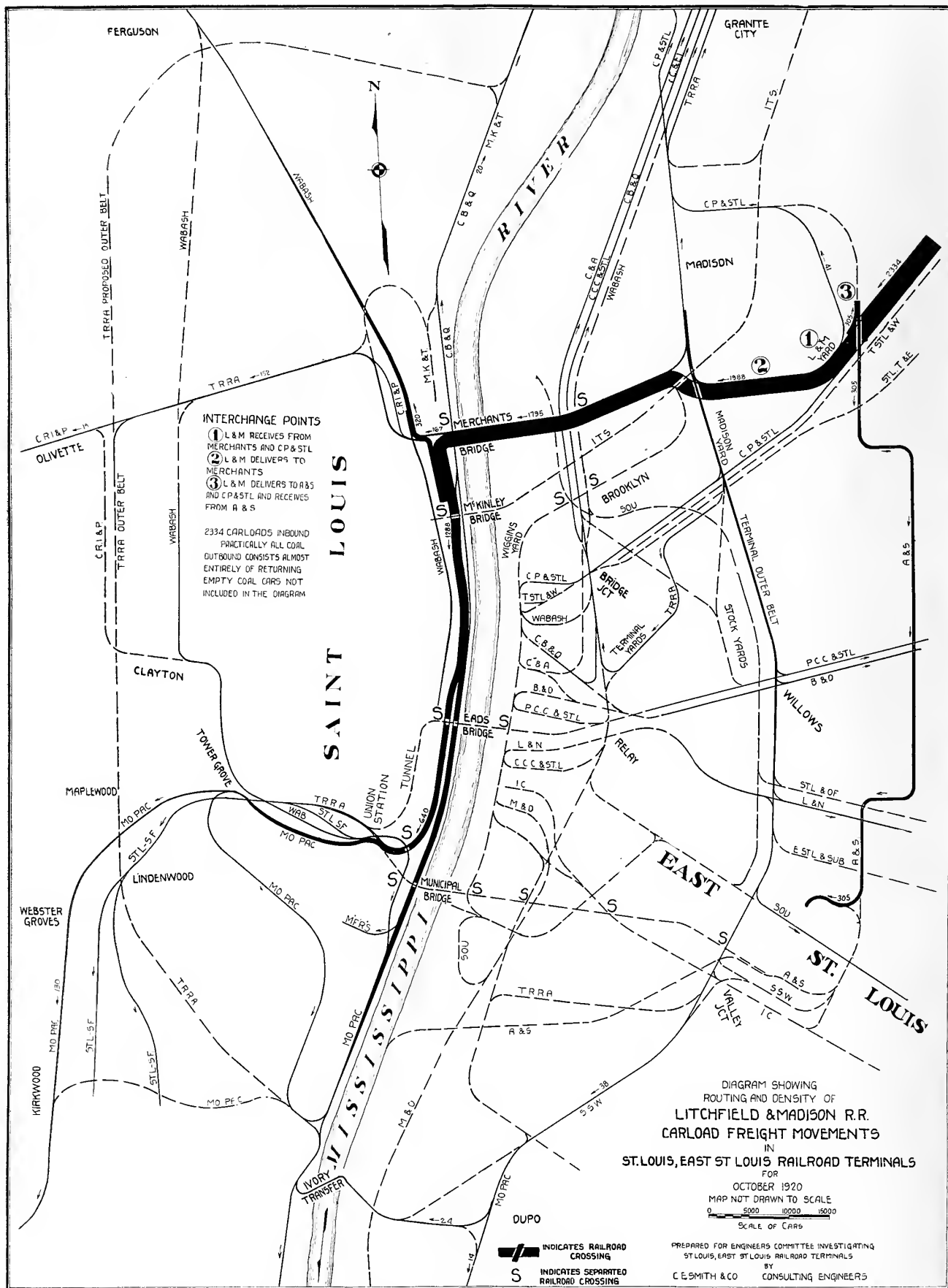


Fig. 47—Carload Freight Diagram—L. & M. R. R.

Cars for the Merchants Bridge Terminal East Side are moved by Terminal engines from their interchange tracks on the Terminal Outer Belt at Granite City. Cars for the Merchants Bridge Terminal West Side are moved by Terminal engines from their interchange tracks at Salisbury street, St. Louis. Cars for the Southern are delivered at Broadway, Venice, and are moved from that point by Southern engines.

In the opposite direction those roads deliver to the Illinois Traction at the same points they receive.

Movement between the Illinois Traction Yard and the St. Louis freight house is made with its own power crossing the river over the McKinley Bridge. All their road trains are broken up and made up in their yard in Granite City.

The carload movement of the Illinois Traction during October, 1920, was so small compared to other railroads, that no diagram of its carload movements was prepared.

During October, 1920, the Illinois Traction handled the following carload business, including cars loaded and unloaded at its freight house:

- 172 carloads in for unloading on own lines, 36 per cent of its inbound,
- 307 carloads in for delivery to other lines, 64 per cent of its inbound,
- 7 carloads loaded locally for other lines,
- 126 carloads from other lines unloaded locally,
- 438 carloads out loaded on own lines, 51.8 per cent of its outbound,
- 406 carloads out from other lines, 48.2 per cent of its outbound,

1,456 carloads (not including empty cars).

0.5 per cent of all St. Louis-East St. Louis carloads.

During the week of October 18-23, 1920, the Illinois Traction handled the following l. c. l. business:

Local:

- Inbound 148 tons, 2.0 per cent of all inbound local,
- Outbound 675 tons, 3.3 per cent of all outbound local.

Connecting Line:

- Inbound 8 tons, 0.1 per cent of all inbound connecting line,
- Outbound 1 ton, — per cent of all outbound connecting line.

Total l. c. l. 832 tons, 2.0 per cent of the total

l. c. l. freight handled in all St. Louis-East St. Louis freight houses.

Litchfield & Madison Railway

The Litchfield & Madison is a coal road entering the east side from the northeast at Madison where it has a yard. Its business consists almost entirely of coal and returning empty coal cars. It has no connections with industries, has no freight house or team tracks, and has no facilities in St. Louis.

Inbound L. & M. freight is received in the Madison Yard where the cars are classified for delivery to:

Alton & Southern,
Chicago, Peoria & St. Louis,
Toledo, St. Louis & Western,
Terminal Railroad Association,
Merchants Bridge,
Wiggins Ferry.

L. & M. engines deliver cars to interchange tracks of the A. & S., and bring back any cars that have been placed there by the A. & S. The other roads receive and deliver cars in the L. & M. Yard.

The Terminal handles loaded cars from the L. & M. Yard in trains to its district yards and connections with other railroads, and does not put them through its large clearing yards.

During October, 1920, the Litchfield & Madison handled the following carload business:

- 2,334 carloads in for delivery to other lines, 100 per cent of its inbound. (Not including empty cars.)

0.8 per cent of all St. Louis-East St. Louis carloads.

Louisville & Nashville Railroad

The Louisville & Nashville enters East St. Louis from the east. It crosses the Alton & Southern, the Illinois Transfer, the V. & C. Belt, the Terminal and the C. C. C. & St. L. at grade.

It has a yard east of Relay Depot known as the Third Street Yard, where its engine facilities are located, and a Lower Yard on the river front where it has a freight house and team tracks. It ends at a connection with the Wiggins Ferry on the river front. The L. & N. has 4.6 per cent of East Side Industries; 1.6 per cent of all the industries within the St. Louis-East St. Louis switching limits.

The L. & N. has an offline freight station

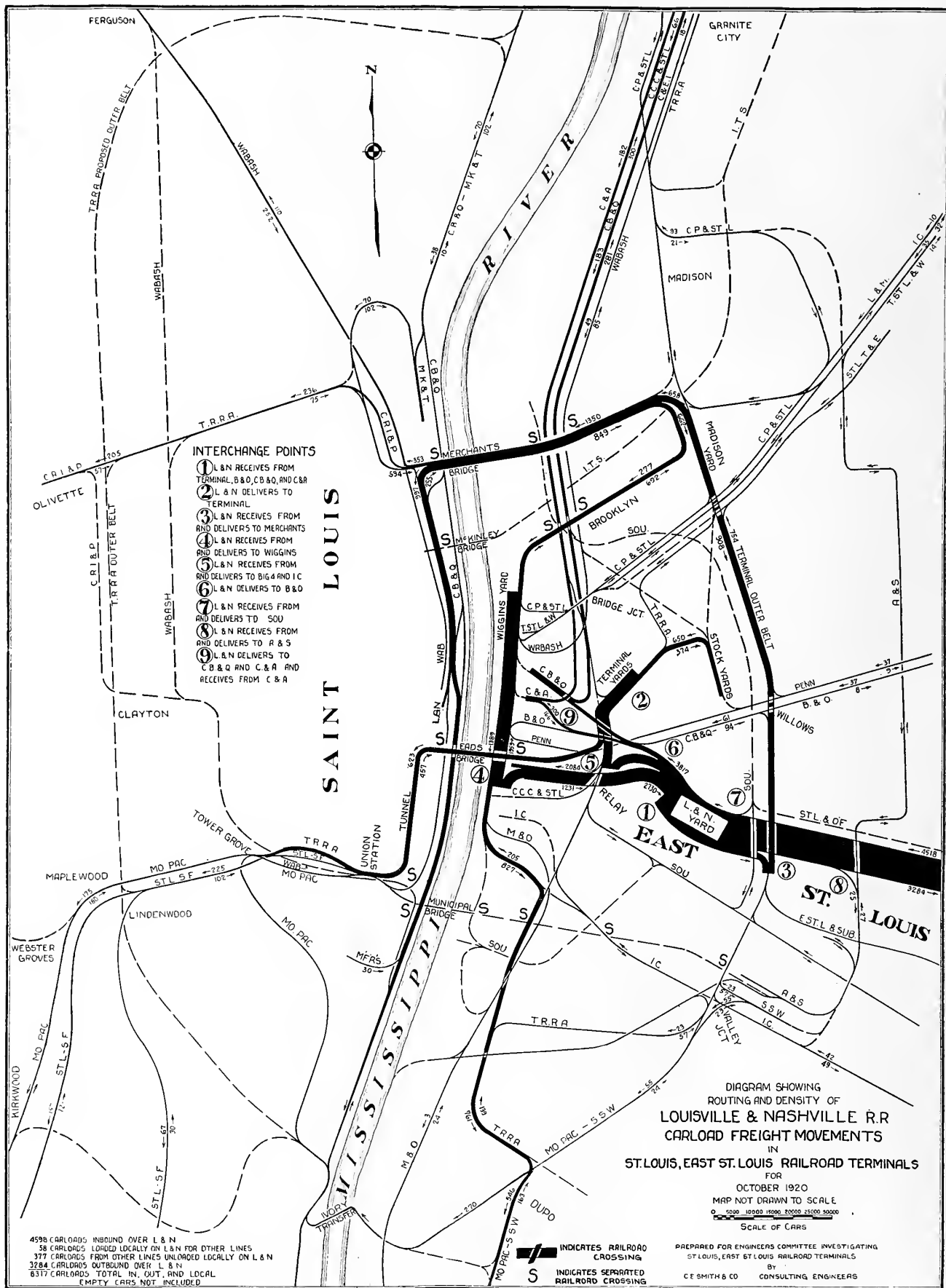


Fig. 48—Carload Freight Diagram—L. & N. R. R.

and team tracks in North St. Louis, connecting with and served by the Terminal Railroad Association.

Inbound L. & N. freight trains are received and broken up in the Third Street Yard. In this yard freight is classified for delivery to:

Alton & Southern,
 Merchants Bridge Terminal.
 Southern,
 Baltimore & Ohio,
 East St. Louis Yard of Terminal.
 East St. Louis Junction,
 Chicago & Alton,
 Chicago, Burlington & Quincy—East.
 Cleveland, Cincinnati, Chicago & St. Louis.
 Illinois Central,
 Wiggins Ferry,
 L. & N. Freight House, Team Tracks and Industries.

Cars for other roads are moved by L. & N. engines to receiving tracks of the other companies with the exception of deliveries to and receipts from Madison Yard and Wiggins. In the case of the former cars are set on interchange track at the crossing of the Illinois Transfer and L. & N. Interchange with the Wiggins Ferry is made in the Lower Yard on the river front. Generally speaking, engines return light, except in the case of the Wiggins Ferry.

The C. C. C. & St. L., I. C. and Wiggins deliver their interchange freight in the Lower Yard. The Alton & Southern, Merchants Bridge Terminal, and Southern deliver on interchange tracks at the crossings of their respective lines, with that of the L. & N. All other roads deliver their interchange freight in the Third Street Yard. The engines of these roads generally return light to their own lines.

The L. & N. house freight, team track freight and industrial freight loaded and unloaded on its own lines is handled outside of the Third Street Yard by its own switch engines which deliver from that yard on inbound and assemble there for outbound. Freight to and from the St. Louis freight house is handled by the Merchants Bridge Terminal. All L. & N. outbound trains are made up in the Third Street Yard.

During October, 1920, the L. & N. handled the following carload business, including cars loaded and unloaded at its freight houses:

454 carloads in for unloading on own lines, 9.9 per cent of its inbound,
 4,144 carloads in for delivery to other lines, 90.1 per cent of its inbound,
 58 carloads loaded locally for other lines,
 377 carloads from other lines unloaded locally,
 783 carloads out loaded on own lines, 23.8 per cent of its outbound,
 2,501 carloads out from other lines, 76.2 per cent of its outbound,

8,317 carloads (not including empty cars).
 3.0 per cent of all St. Louis-East St. Louis carloads.

During the week of October 18-23, 1920, the L. & N. handled the following l. c. l. business:

Local:

Inbound 202 tons, 2.7 per cent of all inbound local,

Outbound 946 tons, 4.6 per cent of all outbound local.

Connecting Line:

Inbound 293 tons, 4.2 per cent of all inbound connecting line,

Outbound 125 tons, 1.8 per cent of all outbound connecting line.

Total l. c. l. 1,566 tons, 3.7 per cent of total l. c. l. freight handled in all St. Louis-East St. Louis freight houses.

Manufacturers' Railway

The Manufacturers' Railway is a terminal switching line located in South St. Louis. It handles only carload freight originating on and consigned to patrons on its line. It serves 8.2 per cent of the west side industries; 6.7 per cent of all the industries within the St. Louis-East St. Louis switching limits. It is well supplied with team tracks which are open to the business of all railroads. It has no l. c. l. facilities.

It has a yard on the St. Louis river front and interchange tracks convenient thereto where it receives from and delivers to its two connections, viz:

Missouri Pacific.

Wiggins Ferry Co.

In its yard inbound cars are classified for delivery to the respective districts it serves, and outbound cars are separated for delivery to its connections.

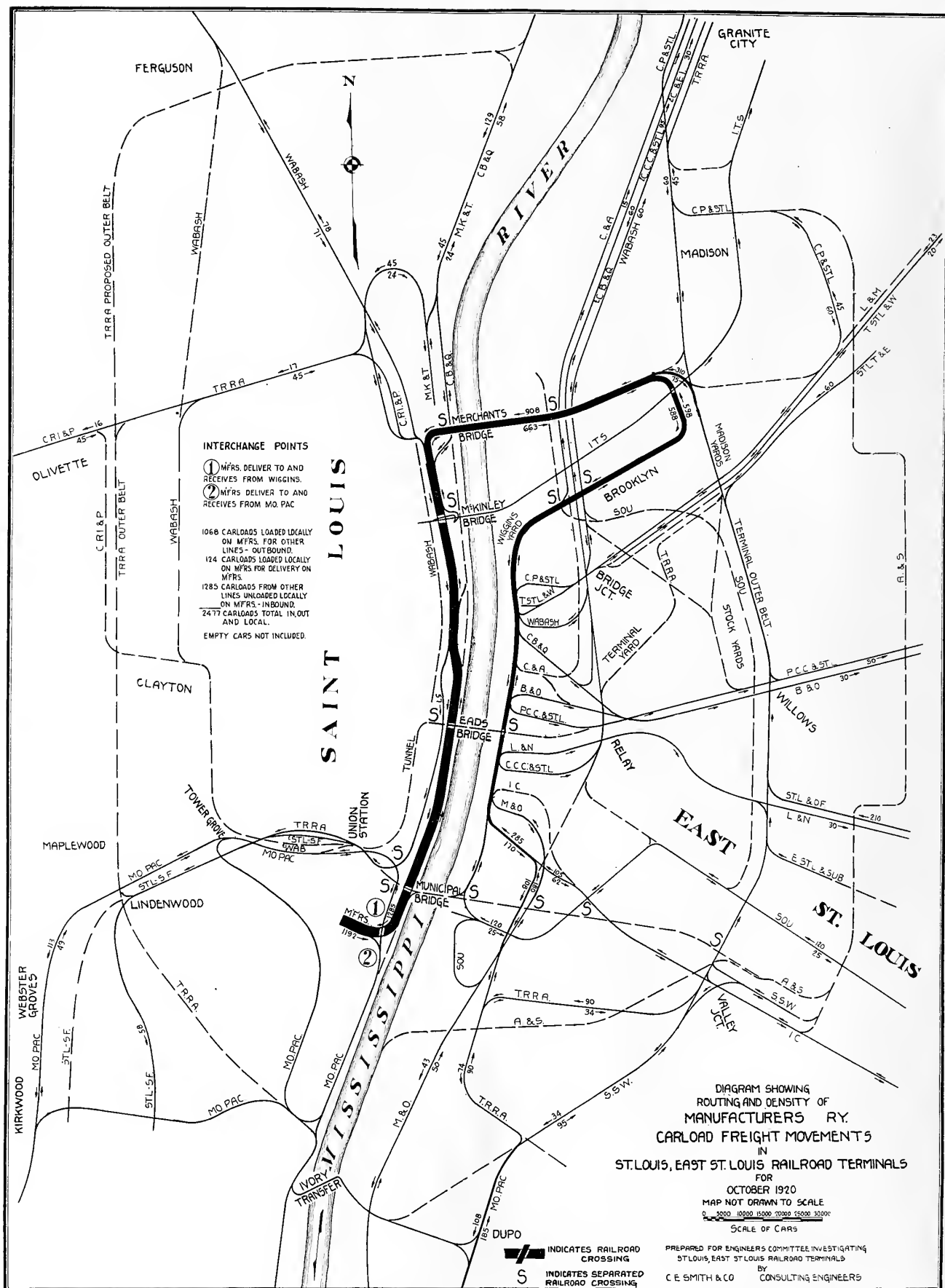


Fig. 49—Carload Freight Diagram—M'fr's. Ry.

During October, 1920, the Manufacturers' Railway handled the following carload business:

1,068 carloads loaded locally for other lines,
1,285 carloads from other lines unloaded locally,

2,353 carloads (not including empty cars).

Missouri, Kansas & Texas Railway

The Missouri, Kansas & Texas Railway enters St. Louis from the north over the main line of the C. B. & Q. The M. K. & T. branches off at North St. Louis into its own yard at Baden. It connects only with the C. B. & Q. and the Merchants Bridge Terminal. It has 0.4 per cent of the west side industries on its tracks; 0.3 per cent of all the industries within the St. Louis-East St. Louis switching limits.

The M. K. & T. has an off-line freight station in North St. Louis connected with the rails of and served by the Merchants Bridge Terminal. It has no facilities in East St. Louis.

Inbound M. K. & T. freight trains are received and broken up in the Baden Yard. In this yard freight is classified for delivery to:

Chicago, Burlington & Quincy—West,
Merchants Bridge Terminal,

M. K. & T. Freight House and Team Tracks,

M. K. & T. Industries.

The cars for M. K. & T. industries are handled outside of Baden Yard by M. K. & T. engines. Cars to and from its off-line freight station and team tracks are handled by Terminal engines. Other cars for the Merchants Bridge Terminal are delivered on its interchange tracks at Carrie avenue by M. K. & T. engines, which return light; M. K. & T. engines also deliver cars to the C. B. & Q.

In the opposite direction the C. B. & Q. and Merchants Bridge Terminal deliver their interchange freight in the Baden Yard.

Outbound road trains are made up in the Baden Yard.

During October, 1920, the M. K. & T. handled the following carload business, including cars loaded and unloaded at its freight house:

243 carloads in for unloading on own lines,
7.0 per cent of its inbound,

3,222 carloads in for delivery to other lines,
93.0 per cent of its inbound,

62 carloads loaded locally for other lines,

578 carloads from other lines unloaded locally,

1,073 carloads out loaded on own lines, 24.3 per cent of its outbound,

3,366 carloads out from other lines, 75.7 per cent of its outbound,

8,544 carloads (not including empty cars).

3.1 per cent of all St. Louis-East St. Louis carloads.

During the week of October 18-23, 1920, the M. K. & T. handled the following l. c. l. business:

Local:

Inbound 70 tons, 0.9 per cent of all inbound local,

Outbound 869 tons, 4.2 per cent of all outbound local.

Connecting Line:

Inbound 161 tons, 2.3 per cent of all inbound connecting line,

Outbound 927 tons, 13.3 per cent of all outbound connecting line.

Total l. c. l. 2,027 tons, 4.8 per cent of the total l. c. l. freight handled in all St. Louis-East St. Louis freight houses.

Missouri Pacific Railroad

The Missouri Pacific has three lines entering St. Louis.

It enters from the west through Kirkwood and Webster. At Grand avenue it crosses the St. L.-S. F. at grade. From Grand avenue to Seventh street it has a succession of yards, forming one long yard in the Mill Creek Valley, passing south of the Union Station. Its engine terminals are located at Compton avenue. At Twenty-third street and at Grand avenue it connects with the St. L.-S. F., Wabash and Terminal Railroad Association. Connection is also made with the Terminal at Twelfth and Seventh streets.

At Seventh street the Mo. Pac. has a freight station and team tracks. It has a track in Poplar street extending from Seventh street to the river front, where it connects with the north and south line of the Mo. Pac. This track is the only connection between the Mill Creek Valley and the river front south of North Market street.

The Missouri Pacific enters St. Louis from the south along the west bank of the Mississippi River. It operates a yard at West Ivory, just south of the City limits, the west terminal of its

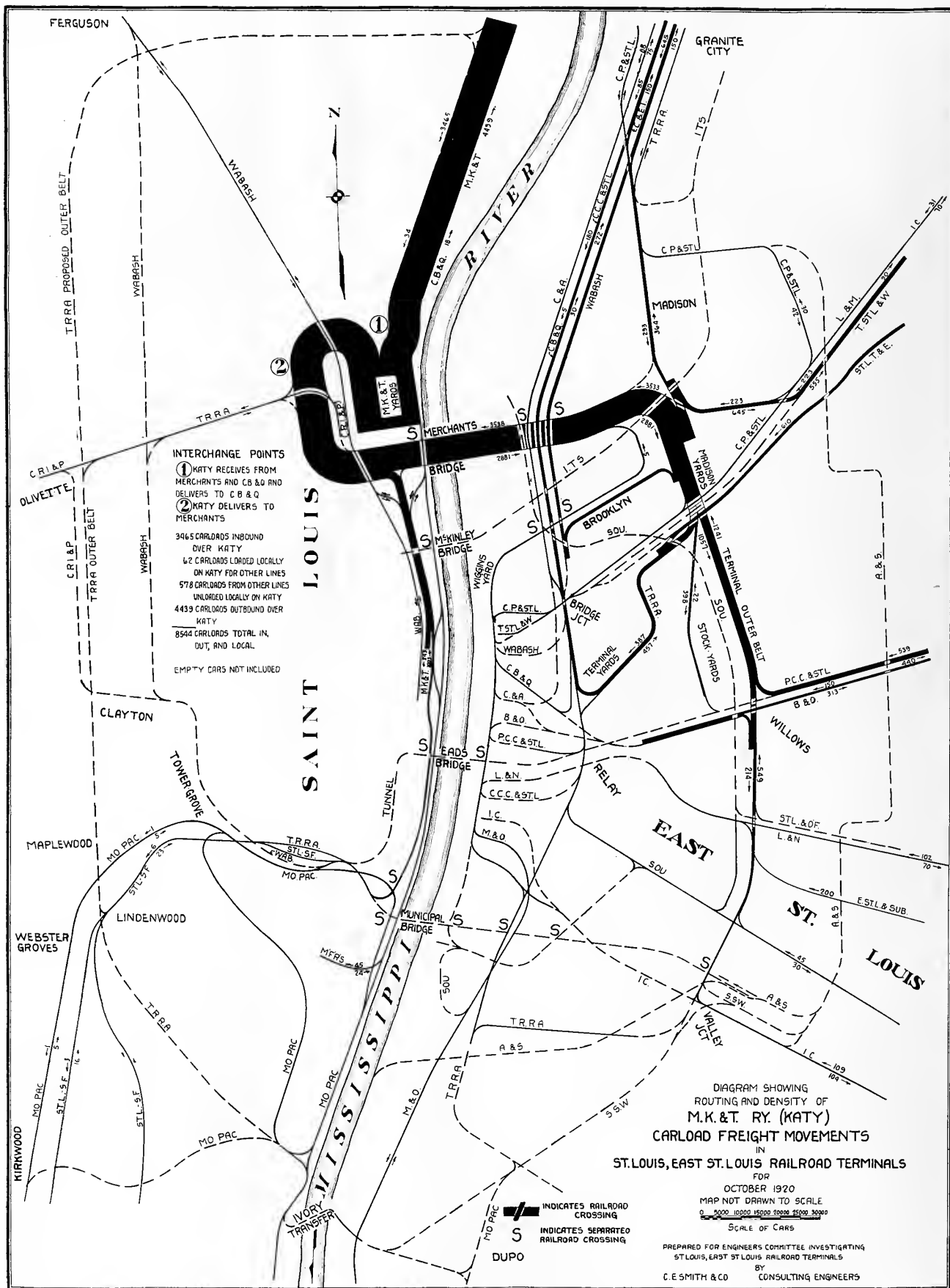


Fig. 50—Carload Freight Diagram—M. K. & T. Ry.

car ferry; a yard at Robert avenue near the south City limits, and a yard at Lesperance street, just south of the business district. Its engine terminals are located in the Lesperance Street Yard. This line extends along the river bank beyond the Eads Bridge to Carr street, where it connects with the Wabash.

At Gratiot street the Mo. Pac. has a freight station and team tracks.

The Mo. Pac. also has an off-line freight station for outbound l. c. l. freight at Biddle street in North St. Louis, connecting with and served by the Merchants Bridge Terminal Railway.

On the west side the M. P. also has a belt line extending between Tower Grove and West Ivory, through the southwest portion of St. Louis, and also an outer belt connection between Kirkwood and West Ivory.

The M. P. has 30.6 per cent of the west side industries on its lines; 25.0 per cent of all the industries within the St. Louis-East St. Louis switching limits.

The M. P. enters the east side from the south along the east bank of the Mississippi River. It has a large hump yard and engine terminals at Dupo, and a smaller yard at Valley Junction, where this line ends at a connection with the Illinois Transfer Railway outer belt of the Terminal Railroad Association. The M. P. has no industries, team tracks or freight house on the east side.

In the Twenty-third Street Yard, St. Louis, inbound freight trains are received and broken up and freight is classified for delivery to:

St. Louis-San Francisco,
Wabash,
Terminal,
Merchants Bridge Terminal,
Missouri Pacific Freight Houses,
Team Tracks and Industries.

Cars for other roads are moved by M. P. engines to the receiving tracks of the other companies. Generally speaking, engines return light, except in case of St. Louis-S. F., which alternates with M. P. in making interchange in both directions.

In the opposite direction these roads deliver their interchange freight in the same yard and the engines of those roads generally return light to their own lines, with the same exception noted as to the St. L.-S. F.

With the exception of the Biddle Street Freight House, all M. P. house freight, team track freight and industrial freight loaded and unloaded on its lines is handled outside of this yard by M. P. switch engines. Biddle street freight is moved by Terminal engines.

Outbound trains are made up in this yard.

In the Lesperance Street Yard, St. Louis, inbound freight trains are received and broken up and freight is classified for delivery to:

Wiggins Ferry,
Manufacturers,
Wabash—West,
Missouri Pacific Freight House,
Team Tracks and Industries..

Cars for other roads are moved by M. P. engines to the receiving tracks of the other companies. Generally speaking, engines return light.

From this yard the M. P. delivers cars to the Wabash in its North St. Louis Yard and the Wabash delivers cars to the M. P. in its Lesperance Street Yard. Engines of both companies return light.

In the opposite direction these roads deliver their interchange freight in the same yard, and the engines of those roads generally return light to their own lines.

All M. P. house freight, team track freight and industrial freight handled in and out of this yard is moved by M. P. engines, except Biddle street freight, which is handled by Terminal engines.

Outbound trains are made up in this yard.

In the Dupo Yard, East Side, inbound freight trains are broken up and freight is classified for delivery to:

Illinois Central,
Alton & Southern,
Merchants Bridge Terminal,
Wiggins Ferry,
Mobile & Ohio.

Cars for the I. C. and A. & S. are moved by M. P. engines to the interchange tracks of these companies at Valley Junction. M. & O. freight is delivered just west of Dupo. The M. P. engines usually bring back cars from those companies. The Merchants Bridge Terminal and Wiggins Ferry receive and deliver in the Dupo Yard with their own engines, returning light only when no cars are ready for them. The M. P. delivers all stock cars to the Merchants Bridge Terminal at Valley Junction.

In exchange for the service performed by the Terminal in handling cars over the long distance to and from Dupo, the M. P. furnishes all the interchange tracks and classifies the cars so that the Terminal can effect direct deliveries to several railroads.

In the opposite direction the Illinois Central and Alton & Southern deliver their interchange freight to the M. P. at Valley Junction; the M. & O. delivers at Vulcan.

Car Ferry at Ivory

The M. P. operates a car ferry across the Mississippi River at Ivory, just south of the St. Louis city limits, on which it handles dead freight, consisting largely of Illinois coal, from its Illinois line and east side railroads, to its Missouri line, and dead freight in the opposite direction. The westbound dead freight is separated at Dupo or West Ivory into local and through freight. The through freight is handled around St. Louis over its outer belt line, known as the Kirkwood Branch, and eastbound through freight for the Ivory car ferries is also handled over this branch. The local cars are distributed from and assembled in West Ivory Yard.

During October, 1920, the M. P. handled the following carload business, including cars loaded and unloaded at its freight houses:

3,397 carloads in for unloading on own lines,
14.5 per cent of its inbound,
19,960 carloads in for delivery to other lines,
85.5 per cent of its inbound,
3,002 carloads loaded locally for other lines,
8,560 carloads from other lines unloaded locally,
3,458 carloads out loaded on own lines, 18.6
per cent of its outbound,
15,140 carloads out from other lines, 81.4 per
cent of its outbound,

53,517 carloads (not including empty cars).

19.6 per cent of all St. Louis-East St. Louis carloads.

During the week of October 18-23, 1920, the M. P. handled the following l. c. l. business:

Local:

Inbound 347 tons, 4.6 per cent of all inbound local,
Outbound 3,108 tons, 15.1 per cent of all outbound local.

Connecting Line:

Inbound 592 tons, 8.5 per cent of all inbound connecting line,

Outbound 2,028 tons, 29.1 per cent of all outbound connecting line.

Total l. c. l. 6,075 tons, 14.4 per cent of the total l. c. l. handled in all St. Louis-East St. Louis freight houses.

Mobile and Ohio Railroad

The Mobile & Ohio enters East St. Louis from the south. It operates the Cahokia Yard south of East St. Louis, the Wood Yard at the south city limits and the Inside Yard on the river front, where it has its engine terminals, freight station and team tracks. It ends at a connection with the Wiggins Ferry on the river front. It has no facilities in St. Louis.

The M. & O. has 1.7 per cent of the east side industries on its lines; 0.2 per cent of all the industries within the St. Louis-East St. Louis switching limits.

Inbound M. & O. freight trains are stopped at Cahokia Yard, the dead freight set out, and all live stock, perishable, merchandise and other high-class freight is brought into the Wood Yard by the road train crew.

The live stock is taken from the Wood Yard to the Stock Yards; the merchandise, perishable and other high-class freight is handled with switch engines to the team tracks, connections, or inbound freight house and given preference over all other commodities.

The dead freight at Cahokia Yard is classified for delivery to:

Alton & Southern,
Southern,
Wiggins Ferry,
Terminal,
Merchants Bridge Terminal,
East St. Louis Junction,
Missouri Pacific.

Each of the above classifications for connections is moved by M. & O. engines to the receiving tracks of the other companies. Generally speaking, engines return light.

Except for the A. & S. and the Southern, which deliver to the M. & O. on interchange tracks at the crossings of these roads, respectively, and the Wiggins Ferry, which delivers on track at Trendley avenue, all other roads deliver their interchange freight to the Mobile & Ohio at the

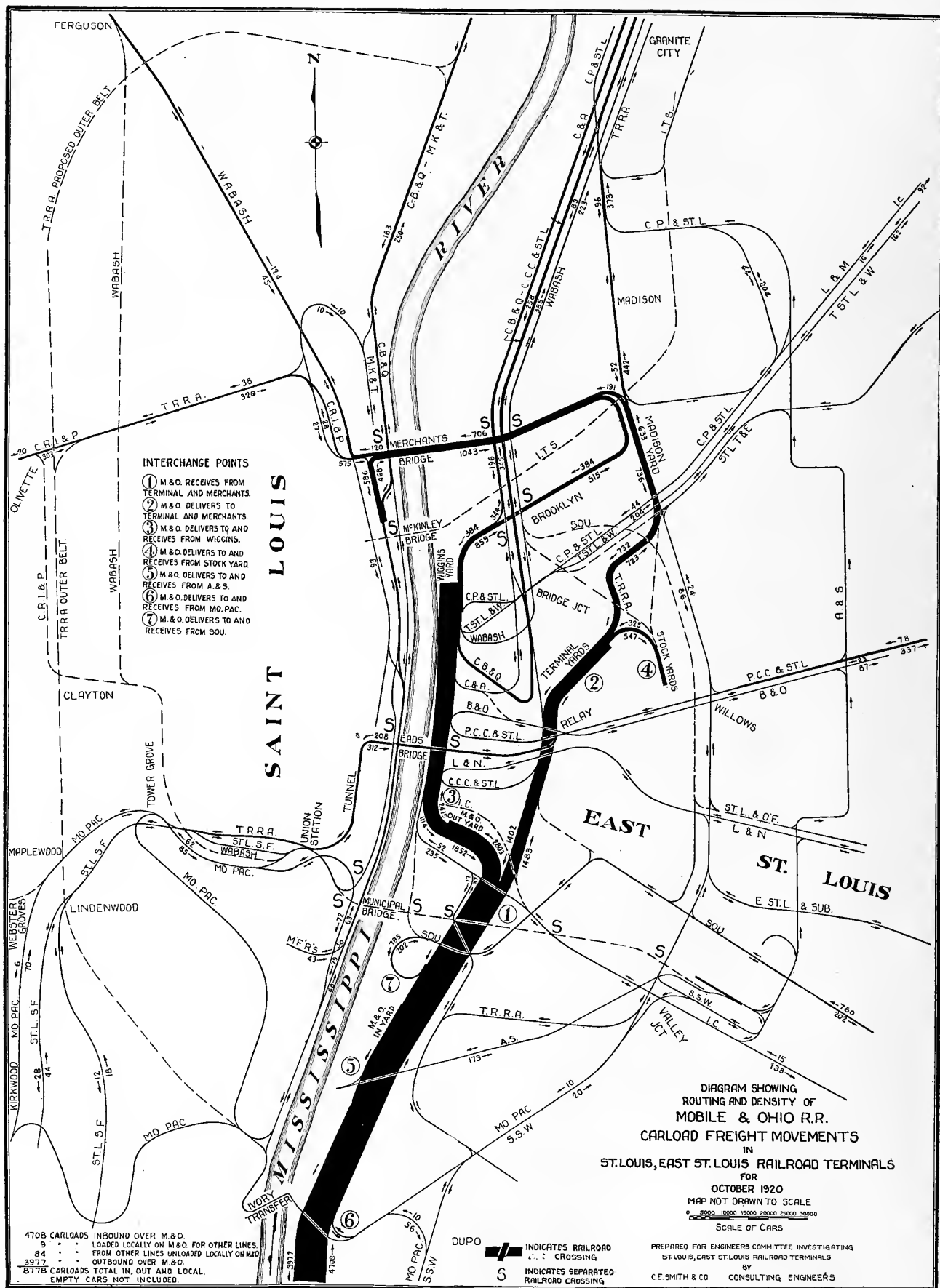


Fig. 52—Carload Freight Diagram—M. & O. R. R.

Wood Yard, and the engines of those roads generally return light to their own lines.

M. & O. house freight, team track freight and industrial freight loaded and unloaded on its lines is handled outside of the inbound and outbound yards by switch engines, which deliver from Wood Yard on inbound and assemble in Wood Yard for outbound. All M. & O. freight trains are broken up at Cahokia Yard and made up in Wood Yard.

During October, 1920, the M. & O. handled the following carload business, including cars loaded and unloaded at its freight house:

388 carloads in for unloading on own lines,
8.2 per cent of its inbound,
4,320 carloads in for delivery to other lines,
91.8 per cent of its inbound,
9 carloads loaded locally for other lines,
84 carloads from other lines unloaded locally,
738 carloads out loaded on own lines, 18.5 per cent of its outbound,
3,239 carloads out from other lines, 81.5 per cent of its outbound,

8,778 carloads (not including empty cars).

3.2 per cent of all St. Louis-East St. Louis carloads.

During the week of October 18-23, 1920, the M. & O. handled the following l. c. l. business:

Local:

Inbound 169 tons, 2.2 per cent of all inbound local,
Outbound 842 tons, 4.1 per cent of all outbound local.

Connecting Line:

Inbound 131 tons, 1.9 per cent of all inbound connecting line,
Outbound 118 tons, 1.7 per cent of all outbound connecting line.

Total l. c. l. 1,260 tons, 2.9 per cent of the total l. c. l. freight handled in all St. Louis-East St. Louis freight houses.

Pennsylvania Railroad

The Pennsylvania Railroad enters East St. Louis from the east. It crosses the Alton & Southern, the Illinois Transfer, the V. & C. Belt, the B. & O., the Terminal and C. C. C. & St. L. at grade.

It has a large outer yard between the Alton & Southern and the Illinois Transfer, known as the Rose Lake Yard, where its engine terminals

are located, and an inner yard on the river front, where it has its freight station and team tracks. It ends at a connection with the Wiggins Ferry.

The Pennsylvania also has an off-line freight station in North St. Louis, connected with and served by the Merchants Bridge Terminal. A portion of St. Louis l. c. l. freight was handled in the latter up to and including 1920; it was closed in 1921 and leased as a warehouse.

The Pennsylvania has 2.5 per cent of east side industries on its rails; 0.5 per cent of all the industries within the St. Louis-East St. Louis switching limits.

Inbound Pennsylvania freight trains are received and broken up in Rose Lake Yard. In this yard freight is classified for delivery to:

Alton & Southern,
Merchants Bridge Terminal,
Southern,
East St. Louis Junction,
East St. Louis Yard of Terminal,
Wiggins Ferry,
Pennsylvania Freight House,
Industries between Rose Lake Yard and Lower Yard.

Cars for other companies are moved by Pennsylvania engines to receiving tracks of the other companies. Generally speaking, engines return light.

Except the Wiggins Ferry, which delivers to the Pennsylvania on the river front, all the other roads deliver their interchange freight at Rose Lake Yard, and the engines of those roads generally return light to their own lines.

The Pennsylvania house freight, team track freight and industrial freight loaded and unloaded on its lines is handled outside of Rose Lake Yard by switch engines which deliver from Rose Lake Yard on inbound and assemble there for outbound. All outbound trains are made up in Rose Lake Yard.

During October, 1920, the Pennsylvania handled the following carload business, including cars loaded and unloaded at its freight houses:

1,609 carloads in for unloading on own lines,
27.0 per cent of its inbound,
4,375 carloads in for delivery to other lines,
73.0 per cent of its inbound,
869 carloads loaded locally for other lines,
772 carloads from other lines unloaded locally,

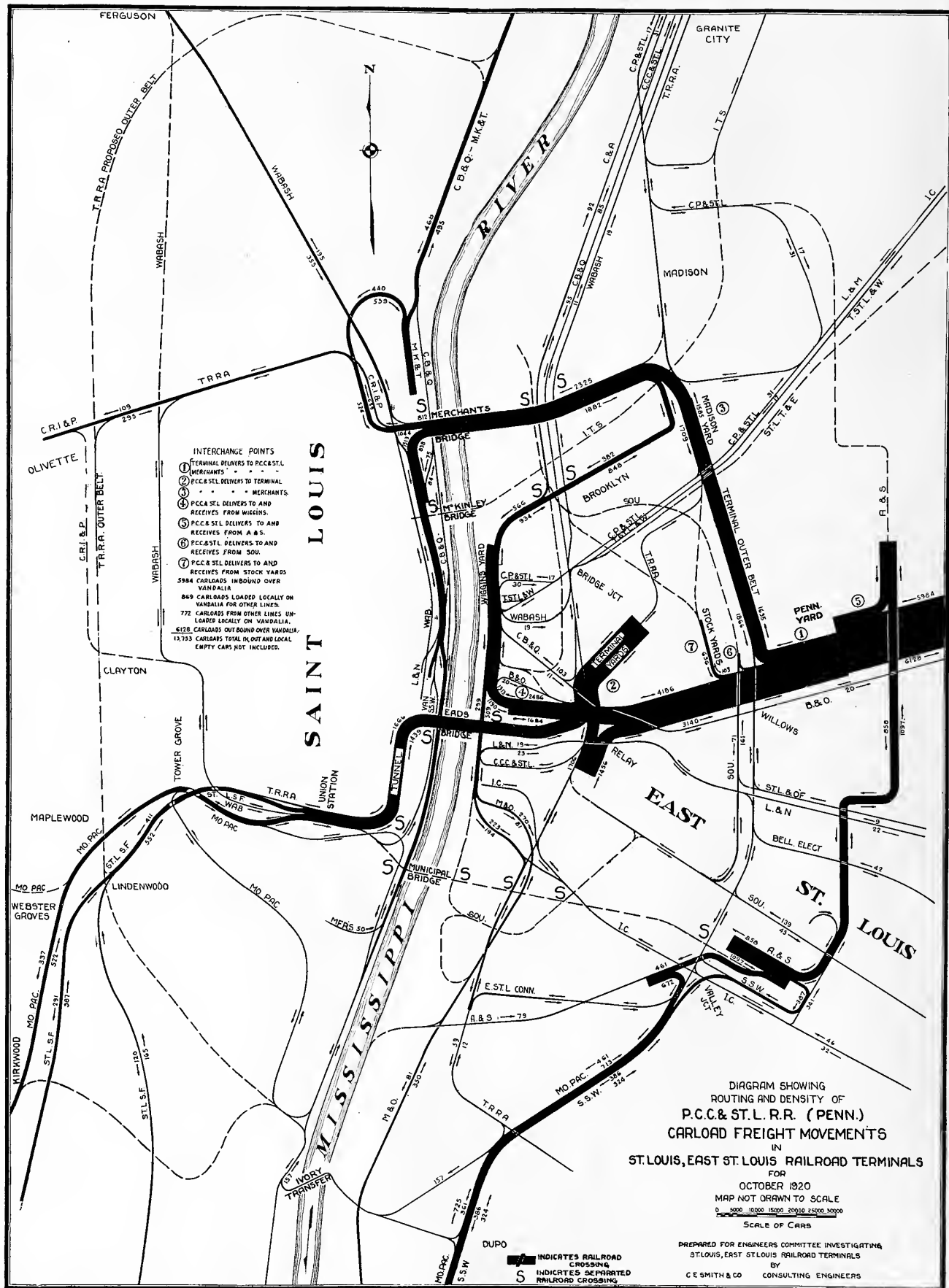


Fig. 53—Carload Freight Diagram—Penn. R. R.

700 carloads out loaded on own lines, 11.4 per cent of its outbound,
5,428 carloads out from other lines, 88.6 per cent of its outbound,

13,753 carloads (not including empty cars).
5.0 per cent of all St. Louis-East St. Louis carloads.

During the week of October 18-23, 1920, the Pennsylvania handled the following l. c. l. business:

Local:

Inbound 366 tons, 4.9 per cent of all inbound local,
Outbound 877 tons, 4.3 per cent of all outbound local.

Connecting Line:

Inbound 981 tons, 14.2 per cent of all inbound connecting line,
Outbound 170 tons, 2.4 per cent of all outbound connecting line.

Total l. c. l. 2,394 tons, 5.8 per cent of the total l. c. l. freight handled in all St. Louis-East St. Louis freight houses.

St. Louis and O'Fallon Railway

The St. Louis & O'Fallon Railway is a short coal road entering East St. Louis from the east. Its business consists almost entirely of coal and returning empty coal cars.

It crosses and connects with the Alton & Southern, the Illinois Transfer Railway and the V. & C. Belt. It has no l. c. l. facilities in East St. Louis, no facilities in St. Louis, and does not connect with any industries.

Inbound St. L. & O'F. freight is received in their yard east of the Illinois Transfer. In this yard freight is classified for delivery to:

Alton & Southern,
Merchants Bridge Terminal,
Southern.

Each of these classifications is moved by O'Fallon engines to receiving tracks of the other companies, except the Merchants Bridge Terminal which receives in the St. Louis & O'F. Yard.

In the opposite direction these roads deliver their interchange freight to the O'Fallon in the same yard.

The St. L. & O'F. handles all coal cars of the East St. Louis & Suburban between Lebanon Junction (about eight miles from East St. Louis) and the Illinois Transfer Railroad.

During October, 1920, the St. L. & O'F. handled the following carload business:

1,946 carloads inbound for delivery to other lines.

0.7 per cent of all St. Louis-East St. Louis carloads.

St. Louis and Ohio River Railroad

The St. Louis & Ohio River Railroad is a short coal road entering East St. Louis near Valley Junction. It was originally built for electric operation, but was never operated until early in 1921 when coal trains were put in operation to serve two mines near Belleville. As it was not in operation in October, 1920, no diagram of its movements has been made.

It has no l. c. l. facilities, nor industrial connections in East St. Louis. It has no facilities in St. Louis.

Its coal trains are broken up and classified in the Davis Yard of the Alton & Southern Railroad, and thereafter merged with the business of that Company.

St. Louis-San Francisco Railway

The St. Louis-San Francisco enters St. Louis from the west in connection with two lines, one south and the other southwest. It operates an outer yard at Lindenwood, just inside of the City limits, a yard at Tower Grove and Chouteau avenues, where its engine terminals are located, and a yard at Twenty-third street, where it ends at a connection with the Terminal Railroad Association.

At Seventh street, in the Mill Creek Valley, and at Biddle street, North St. Louis, it has off-line freight stations and team tracks connecting with and served by the Merchants Bridge Terminal. It has no facilities in East St. Louis.

The St. L.-S. F. has 4.7 per cent of the west side industries on its tracks; 3.8 per cent of all the industries within the St. Louis-East St. Louis switching limits.

Inbound St. L.-S. F. freight trains are received and broken up in the Chouteau Avenue Yard. In this yard freight is classified for delivery to:

Chicago & Eastern Illinois,
Missouri Pacific,
Wabash,
Terminal Railroad,
Merchants Bridge Terminal,

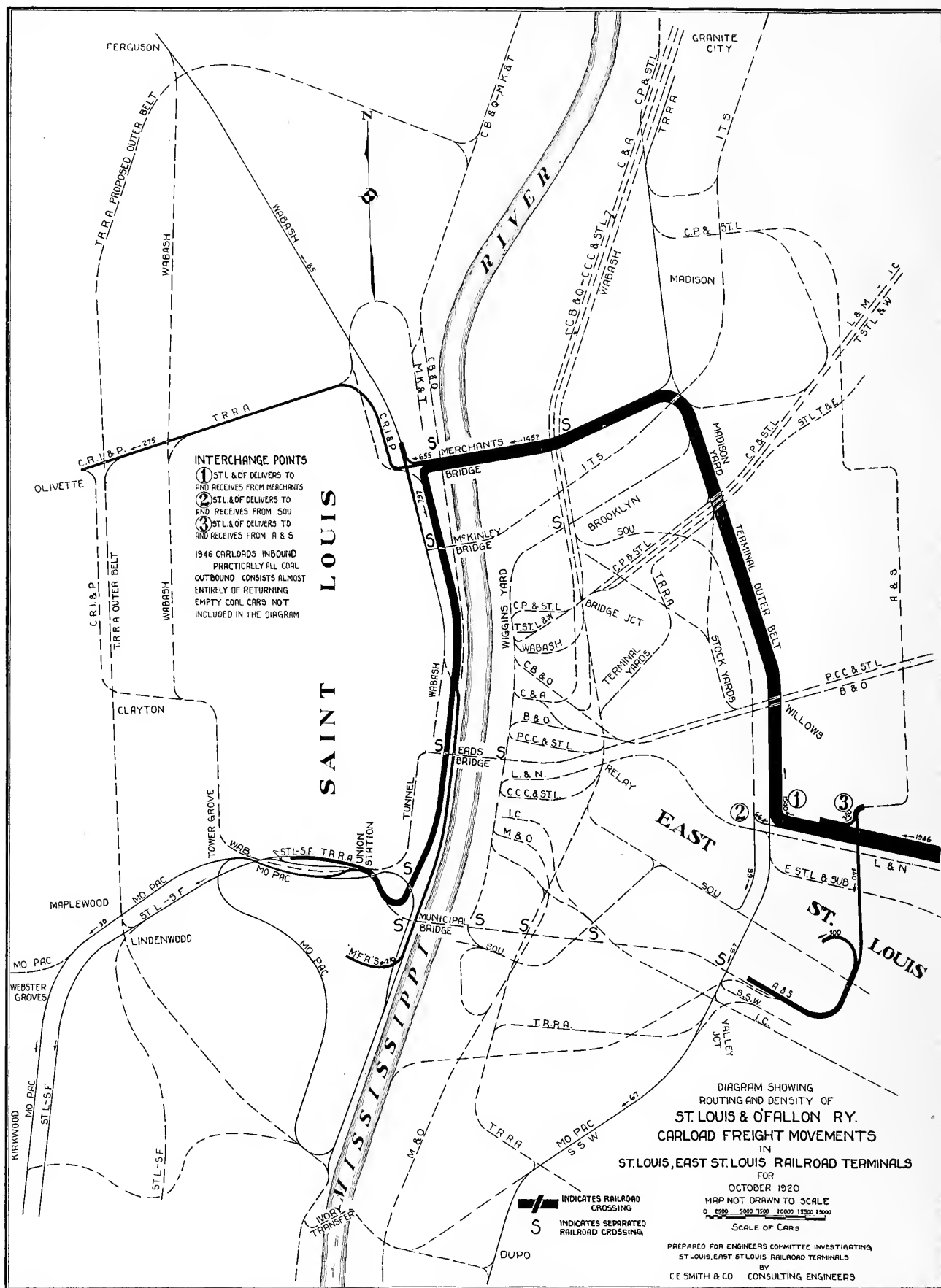


Fig. 54—Carload Freight Diagram—St. L. & O'F. Ry.

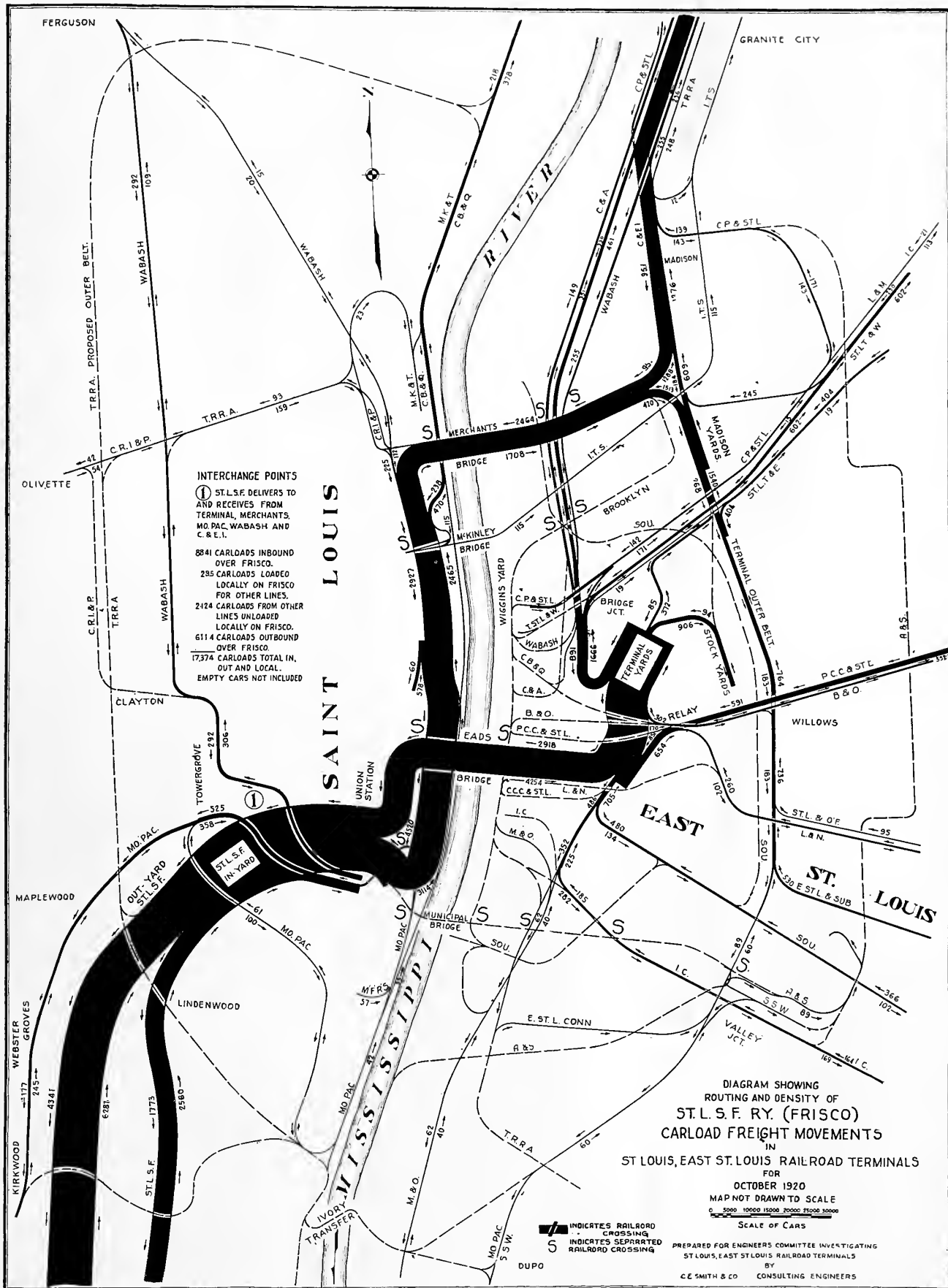


Fig. 55—Carload Freight Diagram—St. L.-S. F. Ry.

Seventh St. Freight House,
Broadway Freight House,
For industries between Chouteau Avenue
Yard and Lindenwood.

Cars for other roads are moved by St. L.-S. F. engines to receiving tracks of the other companies, except C. & E. I., which receives in the Chouteau Avenue Yard. In making deliveries the St. L.-S. F. engines generally return light.

All roads deliver their interchange freight to the St. L.-S. F. in the Twenty-third Street Yard. The engines of those roads generally return light to their own lines.

The St. L.-S. F. house freight and team track freight loaded and unloaded is handled outside of the inbound and outbound yards by the engines of the Terminal Railroad Association. Industrial freight loaded and unloaded on its own lines is handled outside of the inbound and outbound yards of the St. L.-S. F. by its own switch engines, which deliver to Lindenwood or Gratiot Yard for outbound, and to Chouteau Avenue Yard on inbound movement.

Outbound trains are made up in both the Lindenwood and the Gratiot Yards.

As previously explained, the C. & E. I. operates some of its road trains into and out of the St. Louis yards of the St. L.-S. F., using the Merchants Bridge and tracks of the Terminal Railroad Association.

During October, 1920, the St. L.-S. F. handled the following carload business, including cars loaded and unloaded at its freight houses:

539 carloads in for unloading on own lines,
6.1 per cent of its inbound,
8,302 carloads in for delivery to other lines,
93.9 per cent of its inbound,
295 carloads loaded locally for other lines,
2,124 carloads from other lines unloaded locally,
1,478 carloads out loaded on own lines, 23.2 per
cent of its outbound,
4,636 carloads out from other lines, 76.8 per
cent of its outbound,

17,374 carloads (not including empty cars).

6.3 per cent of all St. Louis-East St. Louis carloads.

During the week of October 18-23, 1920, the St. L.-S. F. handled the following l. c. l. business:

Local:

Inbound 226 tons, 3.0 per cent of all inbound local,
Outbound 2,220 tons, 10.7 per cent of all outbound local.

Connecting Line:

Inbound 204 tons, 2.9 per cent of all inbound connecting line,
Outbound 806 tons, 11.5 per cent of all outbound connecting line.

Total l. c. l. 3,456 tons, 8.2 per cent of the total l. c. l. freight handled in all St. Louis-East St. Louis freight houses.

St. Louis Southwestern Railway

The St. Louis Southwestern Railway enters East St. Louis from the south over the tracks of the Missouri Pacific. It has a yard and engine terminals east of Valley Junction, where connections are made with the Illinois Central, Alton & Southern, and Terminal Railroad Association. It has no local facilities in East St. Louis.

The St. L. S. W. has an off-line freight station and team tracks in North St. Louis, connecting with and served by the Merchants Bridge Terminal. It has one industry on its tracks in St. Louis.

Inbound St. L. S. W. freight trains are received and broken up in their yard at Valley Junction. In this yard freight is classified for delivery to:

Alton & Southern,
Illinois Central,
Madison Yard—Merchants Bridge Terminal,
Wiggins Ferry,
East St. Louis Junction,
St. L. S. W. Freight House (St. Louis).

The cars for the Alton & Southern and Illinois Central are moved by St. L. S. W. engines to the receiving tracks of those companies. The other cars are taken away by the engines of other companies when they come to this yard to deliver freight.

All deliveries to the St. L. S. W. are made by other roads at Valley Junction.

The St. L. S. W. house freight, team track freight and industrial freight (all St. Louis) loaded and unloaded, is handled outside of the yard at Valley Junction by engines of the Merchants Bridge Terminal, which deliver to that yard for outbound and take from that yard for

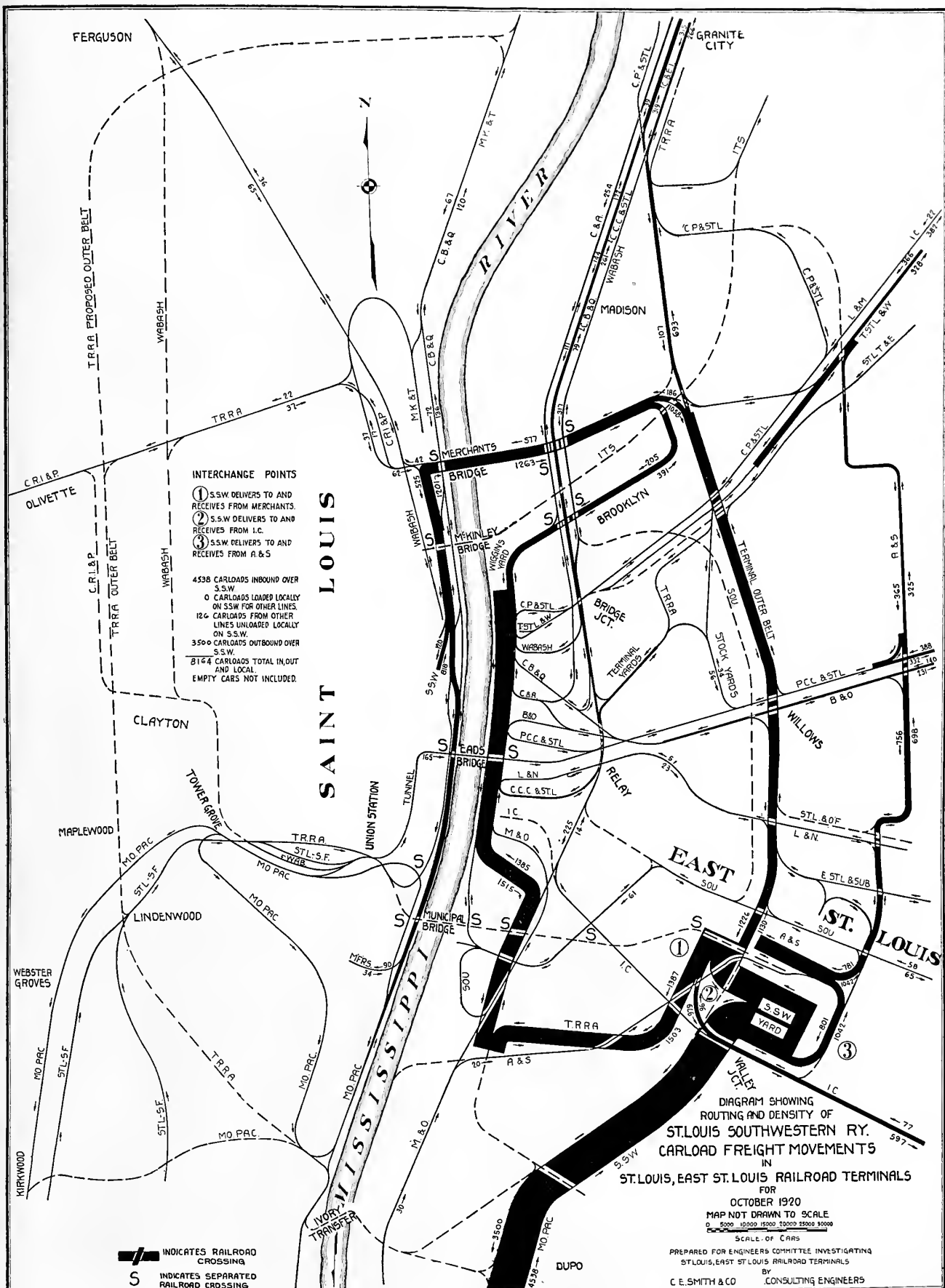


Fig. 56—Carload Freight Diagram—St. L. S. W. Ry.

inbound movement. All outbound road trains are made up in this yard.

During October, 1920, the St. L. S. W. handled the following carload business, including cars loaded and unloaded at its freight house:

- 120 carloads in for unloading on own lines, 2.7 per cent of its inbound,
- 4,418 carloads in for delivery to other lines, 97.3 per cent of its inbound,
- 0 carloads loaded locally for other lines,
- 126 carloads from other lines unloaded locally,
- 818 carloads out loaded on own lines, 23.3 percent of its outbound,
- 2,682 carloads out from other lines, 76.7 per cent of its outbound,

8,164 carloads (not including empty cars).

3.0 per cent of all St. Louis-East St. Louis carloads.

During the week of October 18-23, 1920, the St. L.-SW. handled the following l. c. l. business:

Local:

Inbound 60 tons, 0.8 per cent of all inbound local,

Outbound 795 tons, 3.9 per cent of all outbound local.

Connecting Line:

Inbound 58 tons, 0.8 per cent of all inbound connecting line,

Outbound 456 tons, 6.6 per cent of all outbound connecting line.

Total l. c. l. 1,369 tons, 3.2 per cent of the total l. c. l. freight handled in all St. Louis-East St. Louis freight houses.

St. Louis, Troy and Eastern Railroad

The St. Louis, Troy & Eastern Railroad is a short coal road entering the east side from the northeast. Its traffic is almost entirely coal and returning empty coal cars. It has no local facilities in East St. Louis, no l. c. l. freight station, and no industrial connections. It has no facilities in St. Louis. It has a yard at East Madison, near the Madison Yard of the Terminal Railroad Association.

Inbound St. L. T. & E. freight is taken to their East Madison Yard. In this yard freight is classified for delivery to:

East St. Louis Junction,
Southern,
Merchants Bridge Terminal,
Alton & Southern,
Wiggins Ferry.

Each of these classifications is moved by St. L. T. & E. engines to receiving tracks of the other companies. Generally speaking, engines return light.

All roads deliver their interchange freight at or near this inbound yard and the engines of those roads generally return light to their own lines.

During October, 1920, the St. L. T. & E. handled the following carload business:

3,201 carloads in for delivery to other lines.

1.2 per cent of all St. Louis-East St. Louis carloads.

Southern Railway

The Southern Railway enters East St. Louis from the east. It has very extensive facilities in East St. Louis; none in St. Louis. On the east side it has a modern outer yard, known as the Coapman Yard, lying between the Illinois Transfer and Alton & Southern, as well as several older yards further in.

The Southern owns and operates the Venice and Carondelet Belt which extends from the east bank of the Mississippi River, south of East St. Louis, completely around the city and through Madison and Venice to the Mississippi River west of Granite City, crossing and connecting with all east side lines except the Missouri Pacific, St. L. S. W. and St. L. & O. R.

The Southern is the only trunk line that has belt facilities and connections with nearly all other railroads at East St. Louis. It performs considerable industrial switching and interchange between railroads.

It has 26.6 per cent of east side industries on its rails; 4.9 per cent of all the industries within the St. Louis-East St. Louis switching limits. It has several team tracks, and l. c. l. freight facilities in East St. Louis.

Inbound Southern freight trains are received and broken up in the Coapman Yard. In this yard freight is classified for delivery to:

Alton & Southern,
Merchants Bridge Terminal,
Chicago & Alton,
Cleveland, Cincinnati, Chicago & St. Louis,
Wabash,
Chicago, Burlington & Quincy—East,
Chicago, Peoria & St. Louis,
Toledo, St. Louis & Western,
St. Louis, Troy & Eastern,

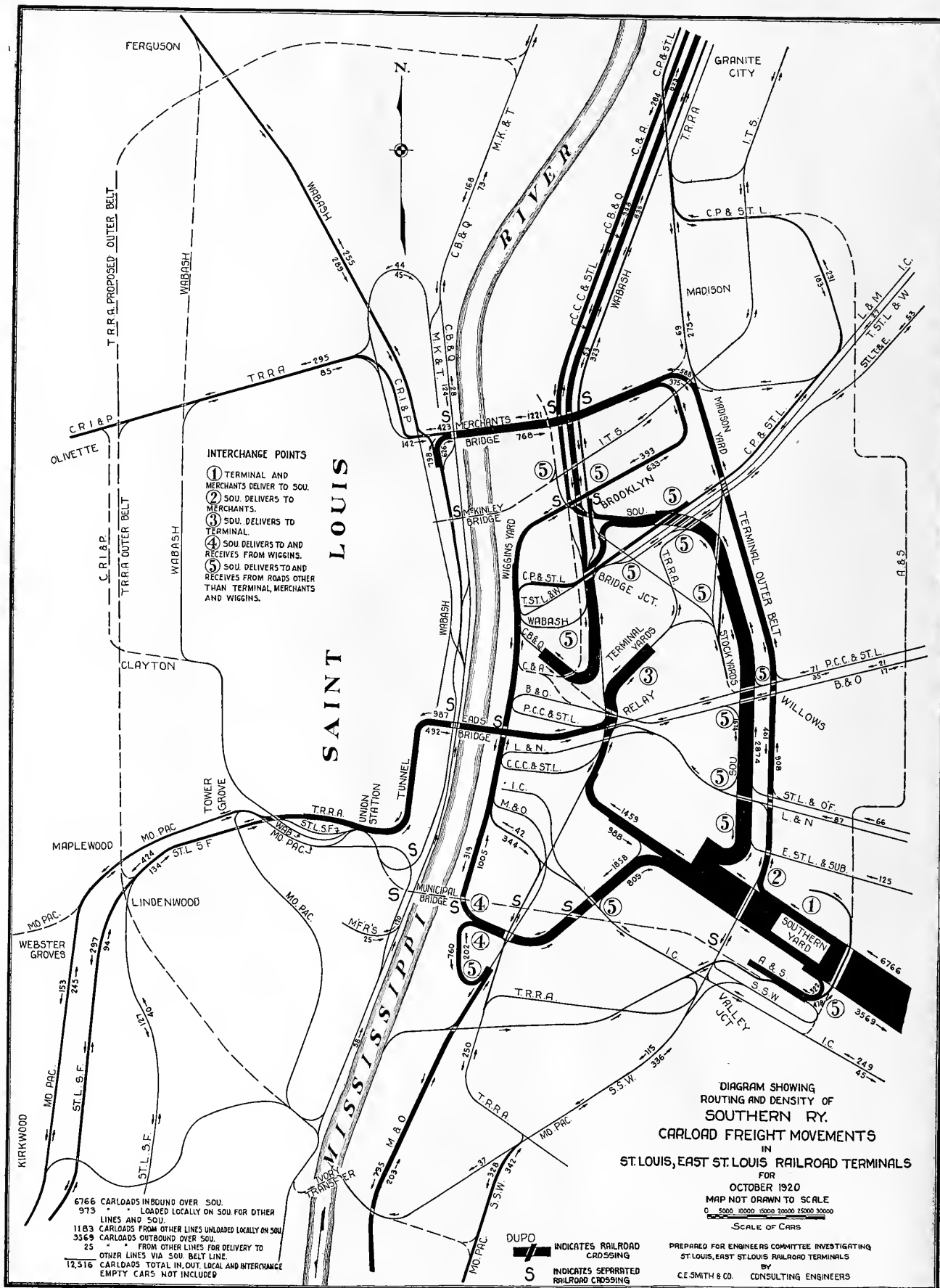


Fig. 58—Carload Freight Diagram—Southern Ry.

East St. Louis Junction,
 Pennsylvania,
 Baltimore & Ohio,
 Louisville & Nashville,
 St. Louis & O'Fallon,
 Illinois Central,
 Mobile & Ohio,
 East St. Louis Yard of Terminal,
 Wiggins Ferry Co.,
 Southern Freight House, Team Tracks, and
 Industries.

Cars for other roads are moved by Southern engines to receiving tracks of the other companies, except for Madison Yard deliveries, which are made at the Southern crossing of the Illinois Transfer Railway. Generally speaking, engines return light, except for interchange with C. B. & Q., as the Southern delivers and receives in the C. B. & Q. Yard.

The Wiggins Ferry and M. & O. deliver their interchange freight in the Dyke Yard on the river front, near the Municipal Bridge. The C. & A., C. C. C. & St. L., Wabash and C. B. & Q.—East, deliver in the Brooklyn Yard near Bridge Junction. The Merchants Bridge and Terminal deliver in the Coapman Yard. All other roads deliver at designated interchange tracks at the respective crossings of those roads with the Southern. Generally speaking, the engines of those roads return light to their own lines.

Southern house freight, team track freight and industrial freight loaded and unloaded on its own lines, is handled outside of Coapman Yard, by its own switch engines which deliver from that yard on inbound and assemble there for outbound movement. All outbound road trains are made up in Coapman Yard.

During October, 1920, the Southern handled the following carload business, including cars loaded and unloaded at its freight houses:

932	carloads in for unloading on own lines,
	13.8 per cent of its inbound,
5,834	carloads in for delivery to other lines,
	86.2 per cent of its inbound,
973	carloads loaded locally for other lines,
1,208	carloads from other lines unloaded locally,
895	carloads out loaded on own lines, 25 per cent of its outbound,
2,674	carloads out from other lines, 75 per cent of its outbound,
12,516	carloads (not including empty cars).

4.5 per cent of all St. Louis-East St. Louis carloads.

During the week of October 18-23, 1920, the Southern handled the following l. c. l. business:

Local:

Inbound 315 tons, 4.2 per cent of all inbound local,

Outbound 560 tons, 2.7 per cent of all outbound local.

Connecting Line:

Inbound 447 tons, 6.4 per cent of all inbound connecting line,

Outbound 115 tons, 1.7 per cent of all outbound connecting line.

Total l. c. l. 1,437 tons, 3.4 per cent of the total l. c. l. freight handled through St. Louis-East St. Louis freight houses.

Toledo, St. Louis and Western Railroad

The Toledo, St. Louis & Western Railroad enters the east side from the north. It crosses the Alton & Southern at Granite City, the Illinois Transfer and V. & C. Belt at Madison, and the V. & C. Belt, the Wabash, C. C. C. & St. L. and C. & A. at Bridge Junction. It ends at a connection with the Wiggins Ferry on the river front.

It operates a yard at Madison and a lower yard and freight station near the river front. It has no industries on its lines, and no facilities in St. Louis.

Inbound T. St. L. & W. freight trains are received and broken up in the yard at Madison. In this yard freight is classified for delivery to:

Alton & Southern,
 Merchants Bridge Terminal,
 East St. Louis Junction,
 Southern Ry.
 East St. Louis Yard of Terminal,
 Chicago, Peoria & St. Louis,
 Chicago & Alton,
 Chicago, Burlington & Quincy—East,
 Wiggins Ferry,
 T. St. L. & W. Freight House.

Cars for other roads are moved by T. St. L. & W. engines to receiving tracks of other companies.

All roads with the exception of the A. & S. and the Merchants Bridge Terminal, deliver their interchange freight in or near the lower yard of the T. St. L. & W. on the river front, and the engines of those roads generally return light to their own lines. The house freight and team

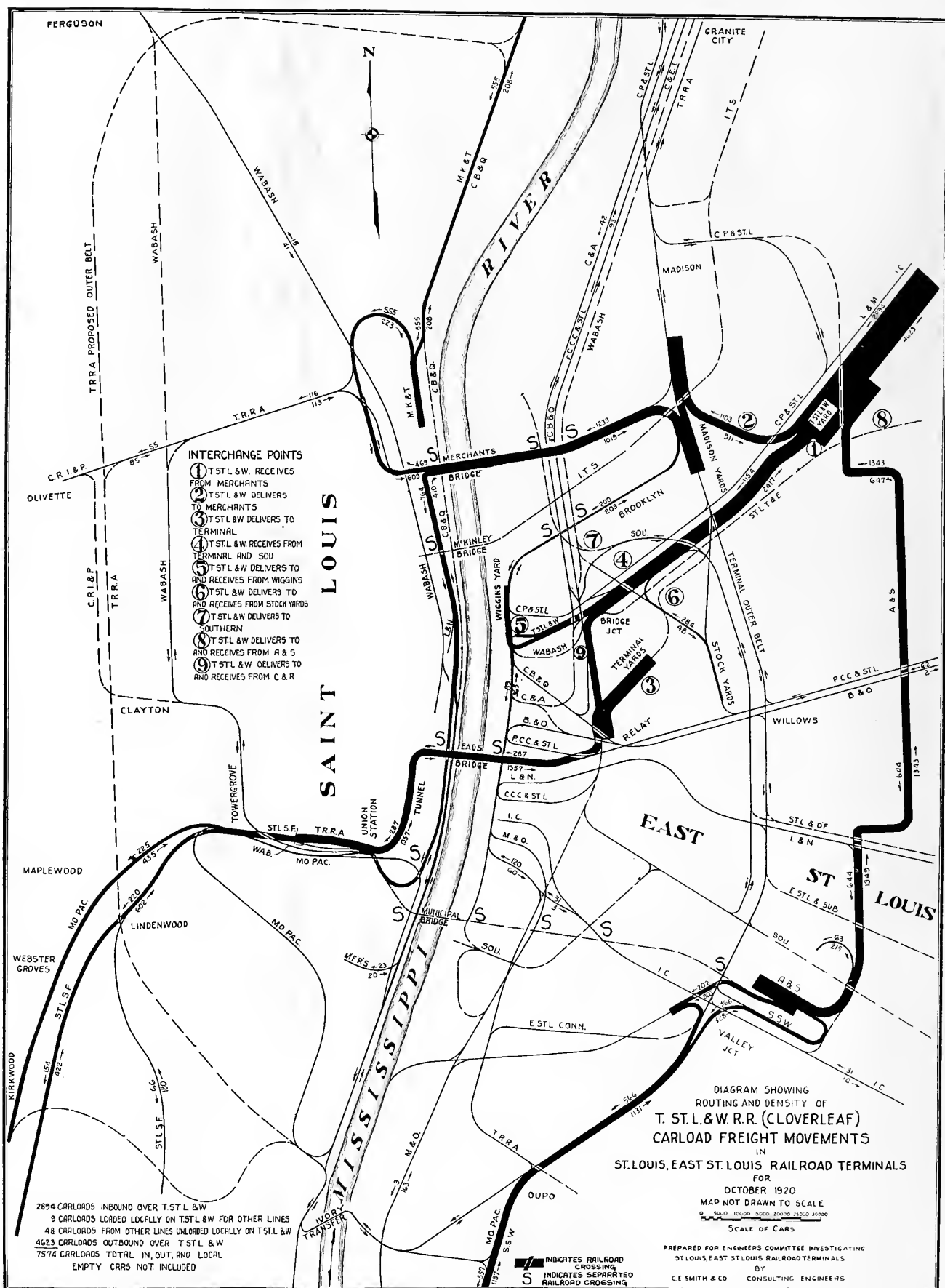


Fig. 59—Carload Freight Diagram—T. St. L. & W. R. R.

track freight is handled on its lines outside of the yard at Madison, by switch engines which deliver from that yard on inbound and assemble there for outbound movement. Outbound trains are made up in the yard at Madison.

During October, 1920, the T. St. L. & W. handled the following carload business, including cars loaded and unloaded at its freight house:

400 carloads in for unloading on own lines,
13.8 per cent of its inbound,
2,494 carloads in for delivery to other lines,
86.2 per cent of its inbound,
9 carloads loaded locally for other lines,
48 carloads from other lines unloaded locally,
144 carloads outbound loaded on own lines,
3.1 per cent of its outbound,
4,479 carloads outbound from other lines, 96.9
per cent of its outbound,

7,574 carloads (not including empty cars).
2.8 per cent of all St. Louis-East St. Louis
carloads.

During the week of October 18-23, 1920, the T. St. L. & W. handled the following l. c. l. business:

Local:

Inbound 254 tons, 3.4 per cent of all inbound local,
Outbound 171 tons, 0.8 per cent of all outbound local.

Connecting Line:

Inbound 302 tons, 4.3 per cent of all inbound connecting line,
Outbound 26 tons 0.4 per cent of all outbound connecting line.

Total l. c. l. 753 tons, 1.8 per cent of the total l. c. l. freight handled through all St. Louis-East St. Louis freight houses.

Wabash Railway

The Wabash Railway reaches St. Louis and East St. Louis by lines from the north on both sides of the river.

On the west side the Wabash divides at Ferguson, north of St. Louis, and has two lines, one around the west city limits and into the Mill Creek Valley to Twenty-third street, just west of the Union Station, and the other following the North St. Louis river front as far south as Franklin avenue, where it terminates at its freight station. It also connects with the Missouri Pacific at Carr street on the river bank.

It has a large central yard, known as the

Luther Yard, north of the Merchants Bridge, where its engine terminals are located, and several smaller yards.

On the east side the Wabash has an outbound yard at Nameoki, north of Granite City, and an inbound yard at Brooklyn, where its engine terminals are located, just north of Bridge Junction. It also has a lower yard and freight station on the river front, where its line ends at a connection with the Wiggins Ferry.

Wabash—West Side:

Inbound Wabash freight trains on the west side are received and broken up in the Luther Yard, and in the Ewing Avenue Yard in the Mill Creek Valley. In these yards freight is classified for delivery to:

Merchants Bridge Terminal,
Wiggins Ferry,
Chicago, Burlington & Quincy—West,
Missouri Pacific,
St. Louis-San Francisco,
Terminal R. R.,
Wabash Freight House (St. Louis),
Industries on Wabash—West,
Industries on Union Depot Line,
Wabash—East.

Cars for other roads are moved by Wabash engines to receiving tracks of the other companies. Generally speaking, engines return light, except when there are cars ready to be taken back, or the engine is assigned to other duties.

The Mo. Pac., St. L.-S. F., and the Terminal deliver their interchange freight to the Wabash in the Ewing Avenue Yard. All other roads deliver their interchange freight at the Luther Yard and the engines of those roads generally return light to their own lines.

All Wabash freight destined for Wabash—East is moved across the Merchants Bridge with Wabash engines.

The Wabash house freight, team track freight and industrial freight loaded and unloaded on its lines, is handled outside of the Luther and Ewing Avenue Yards by switch engines of the Wabash, which deliver from those yards on inbound and assemble there for outbound movement.

All Wabash road trains are broken up and made up at the Luther Yard, except cars destined and originating on the Union Depot Line, which are made up at the Ewing Avenue Yard.

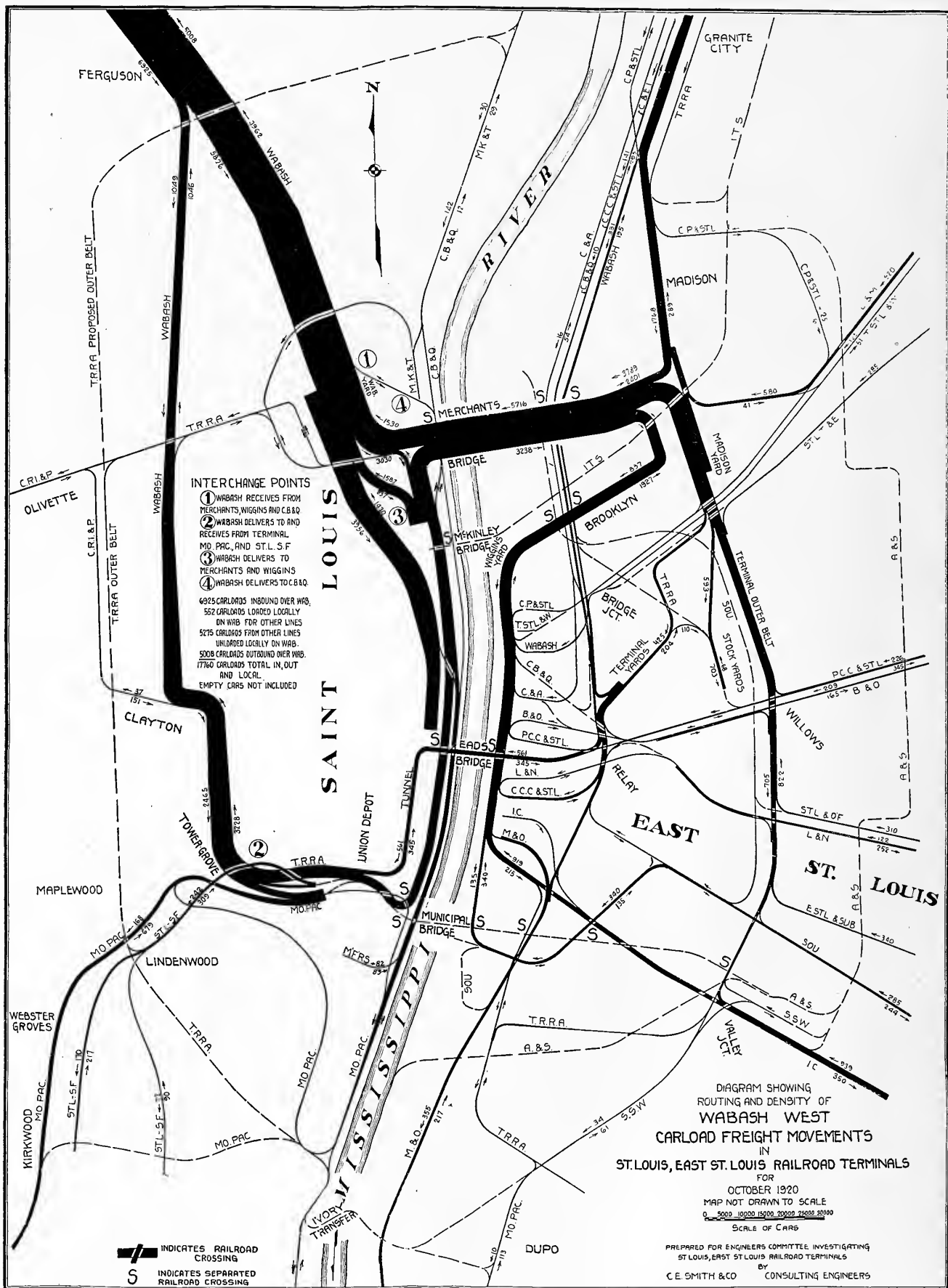


Fig. 60—Carload Freight Diagram—Wab. Ry. West.

Wabash—East Side:

Inbound Wabash freight trains on the east side are received in the Brooklyn Yard, except such freight as is destined for Wabash—West, which is set out at the Nameoki Yard. In Brooklyn Yard the freight is classified for delivery to:

Southern,
East St. Louis Junction,
Merchants Bridge Terminal,
East St. Louis Yard of Terminal,
Wiggins Ferry,
Wabash Freight House (E. St. Louis),
Industries between Brooklyn and Granite City,
Wabash—West.

Cars for other roads are moved by Wabash engines to receiving tracks of the other companies. Generally speaking, engines return light.

Except the Wiggins Ferry, which delivers to the Wabash on the river front, and the Southern and the East St. Louis Junction, which deliver at Brooklyn, all other roads deliver their interchange freight at the Nameoki Yard, and the engines of those roads generally return light to their own lines.

Wabash house freight, team track freight, and industrial freight loaded and unloaded on its own lines, is handled outside of the Brooklyn and Nameoki yards by switch engines which deliver from the Brooklyn Yard on inbound and assemble at the Nameoki Yard for outbound movement.

All Wabash inbound road trains are broken up in the Brooklyn Yard, and outbound trains are made up in the Nameoki Yard.

Because of trackage agreement with the Terminal Railroad Association the Wabash moves all freight destined for its own lines in St. Louis over the Merchants Bridge with its own engines.

During October, 1920, the Wabash handled the following carload business, including cars loaded and unloaded at its freight house:

2,625	carloads in for unloading on own lines,
	19.3 per cent of its inbound,
10,948	carloads in for delivery to other lines,
	80.7 per cent of its inbound,
570	carloads loaded locally for other lines,
5,373	carloads from other lines unloaded locally,
2,153	carloads out loaded on own lines, 20.1 per cent of its outbound,
8,551	carloads out from other lines, 79.9 per cent of its outbound,

30,220 carloads (not including empty cars).

11.0 per cent of all St. Louis—East St. Louis car loads.

During the week of October 18-23, 1920, the Wabash handled the following l. c. l. business:

Local:

Inbound 1,995 tons, 26.4 per cent of all inbound local.

Outbound 2,339 tons, 11.3 per cent of all outbound local.

Connecting Line:

Inbound 1,016 tons, 14.5 per cent of all inbound connecting line,

Outbound 647 tons, 9.3 per cent of all outbound connecting line.

Total l. c. l. 5,997 tons, 14.2 per cent of all the l. c. l. freight handled in St. Louis—East St. Louis freight houses.

CARLOAD FREIGHT—VOLUME AND DISTRIBUTION

Study of Freight Movements.

An intensive study was made of the movement within the St. Louis-East St. Louis railroad terminals of all carloads of freight handled by each railroad during the month of October, 1920, that month having been chosen because it was the last normal month prior to the commencement of this study. As the answers to the questionnaire were not sufficiently complete for the purpose, the records of the railroads were consulted.

Without exception the railroads offered their records for the use of the Committee for this purpose. Car record clerks employed by the Committee copied off every carload and empty movement, recording for through cars, road and point of arrival, where classified, point of interchange, intermediate handling, and point of departure, and for local cars, in addition, where loaded or unloaded. More than 500,000 car records were consulted and recorded from which tables and graphic diagrams were prepared for all the railroads.

The study also included the number and distribution of industries with track connections, the distribution of local carload business, the relation of local and through business, and other features relating to the handling of freight in the St. Louis-East St. Louis railroad terminals.

Statements describing the operation of each road were prepared and sent to the local representatives for approval or revision. As revised to agree with the corrections that were received, the statements appear in this report.

In addition to the study of car movements a time study was also made.

Time Study.

The object of the time study was to determine the length of time consumed in handling

loaded freight cars in the St. Louis terminals. For this purpose eight to ten cars were chosen at random from the interchange records of the Terminal Railroad Association, the Merchants Bridge Terminal Railway Co., and the Wiggins Ferry Co., for the month of October, 1920, for each movement over which considerable numbers of cars are handled daily. No attention was paid to movements between roads interchanging only occasionally, or in very small amounts.

A total of 3,548 cars were selected at random by choosing nine or ten on each of 357 separate connections. After recording the car numbers and initials from the interchange records, the car service records of the Terminal lines and also of each individual trunk road were consulted to ascertain the dates on which those cars arrived in the receiving yard of the trunk line, delivered to the Terminal, delivered by the Terminal to a connecting line or an industry, and if to a connecting line the date of delivery to an industry or departure from the city; similar dates were ascertained for the opposite directions.

Out of a total of 3,548 cars chosen at random from the interchange records about 10 per cent were omitted from the averages on account of incomplete records, cars held for re-consignment, contents transferred to other cars, cars sent to repair tracks, and in some cases, about 1 per cent additional, tracers being unable to find the dates. The averages are based on the normal movement of 3,160 cars. A total of over 20,000 records were consulted.

In addition to securing the car initials and numbers, it was also necessary on certain roads in the case of cars set out and picked up from industries to record the name of the consignor or consignee in each case in order that the car

might be traced in the records of the local switching yard serving the industry, the only place where that information was obtainable.

No effort was made to ascertain exact hour of delivery as that would have involved a very exhaustive inquiry into each switching movement. When cars were delivered same day as received, that is, in less than 24 hours, it was considered that no day had elapsed, but if a car arrived late one day and was delivered early next day—delivery being made in much less than 24 hours, one day was recorded, according to the usual railroad practice. No cars were traced except those making movements over Terminal lines. Many l. c. l. cars and cars to and from the East St. Louis Stock Yards were traced; as those cars are usually handled in one day, they have not been included in the averages.

The following tables contain a summary of the general results. Appendix F contains a summary of the movements that were studied for each individual road.

The summary indicates that the average time consumed by loaded cars in through movements is about three days which will average about one day on the arriving road, one day on the Terminal, and one day on the departing road, although in many cases five and six days were consumed in making through movements, and occasionally much longer.

The summary also shows that the average time between an industry and the road haul is approximately four days, which is usually one day on receiving road, one day on Terminal for

transfer movement, and two days on delivering road, although in many cases six and seven days were consumed in the setting of cars at local industries after their arrival in the district, and in some cases much longer.

The 10 per cent that were omitted from the averages consumed as much as ten, twenty, and in extreme cases thirty days; being so abnormal they were omitted from the averages.

Industries With Track Connections

The number of industries with track connections on each side of the river within the switching limits is as follows:

St. Louis and west side—1,207, 81.3 per cent.

East St. Louis and east side—277, 18.7 per cent.

In St. Louis the percentage of all industries served by the railroads having the most extensive terminals are as follows:

Missouri Pacific—30.6 per cent of west side, 25 per cent of total.

Terminal Railroad Association—27.1 per cent of west side, 22.0 per cent of total.

Wabash—23.9 per cent of west side, 20.2 per cent of total.

Manufacturers'—8.2 per cent of west side, 6.7 per cent of total.

On the East Side the industries are distributed as follows:

Terminal Railroad Association—39.2 per cent of east side, 7.3 per cent of total.

Southern—26.6 per cent of east side, 4.9 per cent of total.

No other railroad has more than 5 per cent of the industries on its lines.

TABLE VIII—SUMMARY OF AVERAGE NUMBER OF DAYS CONSUMED IN HANDLING THROUGH CARLOAD FREIGHT VIA TERMINAL LINES FROM ARRIVAL IN TO DEPARTURE FROM ST. LOUIS DISTRICT AND LOCAL FREIGHT UNTIL SET AT INDUSTRY.

	Via Eads	Via Merchants	Via Wiggins
Through Movement.			
From East Side lines to West Side lines.....	3.1	2.6	2.8
From West Side lines to East Side lines.....	3.0	2.1	2.9
From East Side lines to East Side lines.....	.....	3.1	3.3
From West Side lines to West Side lines.....	.....	2.5	3.3
Average Through Movement about three days.			
Local Delivery.			
From East Side lines to West Side lines.....	3.6	3.1	3.5
From West Side lines to East Side lines.....	4.0	5.5	3.8
From West Side lines to West Side lines.....	3.8	3.8	3.9
Average Local Deliveries about four days.			

There are many more industries without track connections, which are served by team tracks and l. c. l freight houses.

TABLE IX—NUMBER AND PERCENTAGE OF INDUSTRIES SERVED BY EACH RAILROAD IN ST. LOUIS—EAST ST. LOUIS TERMINAL DISTRICT.

Railroads	No. of Industries	Per Cent
A. & S.	21	1.4
B. & O.	7	.5
C. & A.	2	.1
C. B. & O.	32	2.2
C. P. & St. L.	10	.7
T. R. R. A.	435	29.3
I. T. S.	18	1.2
L. & N.	24	1.6
Manufacturers	99	6.7
M. K. & T.	5	.3
M. & O.	3	.2
Mo. Pac.	370	25.0
St. L.-S. F.	57	3.8
St. L.-S. W.	1	.1
Southern	74	4.9
C. R. I. & P.	13	.9
Pennsylvania	7	.5
Wabash	300	20.2
C. C. C. & St. L.	6	.4
Total number of industries..	1,484	100.0

TABLE X—NUMBER AND PERCENTAGE OF INDUSTRIES SERVED BY EACH RAILROAD ON EACH SIDE OF RIVER.

St. Louis.

Railroads	No. of Industries	Per Cent
C. B. & O.	32	2.6
T. R. R. A.	326	27.1
I. T. S.	4	.3
L. & N.	11	1.0
Manufacturers	99	8.2
M. K. & T.	5	.4
Mo. Pac.	370	30.6
St. L.-S. F.	57	4.7
St. L.-S. W.	1	.1
C. R. I. & P.	13	1.1
Wabash	289	23.9
Total	1,207	100.0

East St. Louis and East Side.

Railroads	No. of Industries	Per Cent
A. & S.	21	7.6
B. & O.	7	2.4
C. & A.	2	.7

C. P. & St. L.	10	3.6
T. R. R. A.	109	39.2
I. T. S.	14	5.1
L. & N.	13	4.6
M. & O.	3	1.7
Southern	74	26.6
Pennsylvania	7	2.5
Wabash	11	3.9
C. C. C. & St. L.	6	2.1
Total	277	100.0

Distribution of Local Carload Business

The distribution of industries does not indicate the distribution of cars loaded and unloaded on both sides of the river, which including cars at team tracks, but not including cars at freight houses, were as follows for October, 1920:

St. Louis and West Side.....42,597—53.3%

E. St. Louis and East Side...37,314—46.7%

The principal local carload business was distributed on each side of the river about as follows:

St. Louis and West Side:

River front of Central Business District24.7%

Central Business District—Seventh street to City Limits.....16.7%

Remainder of city (outer districts)...11.9%

East St. Louis and East Side:

Madison and Granite City District...11.9%

Stock Yards.....17.7%

East St. Louis.....15.1%

Remainder of East Side.....2.0%

The total number of carloads handled in St. Louis-East St. Louis terminals in October, 1920, was as follows:

Brought in for interchange and through movement.....80,231

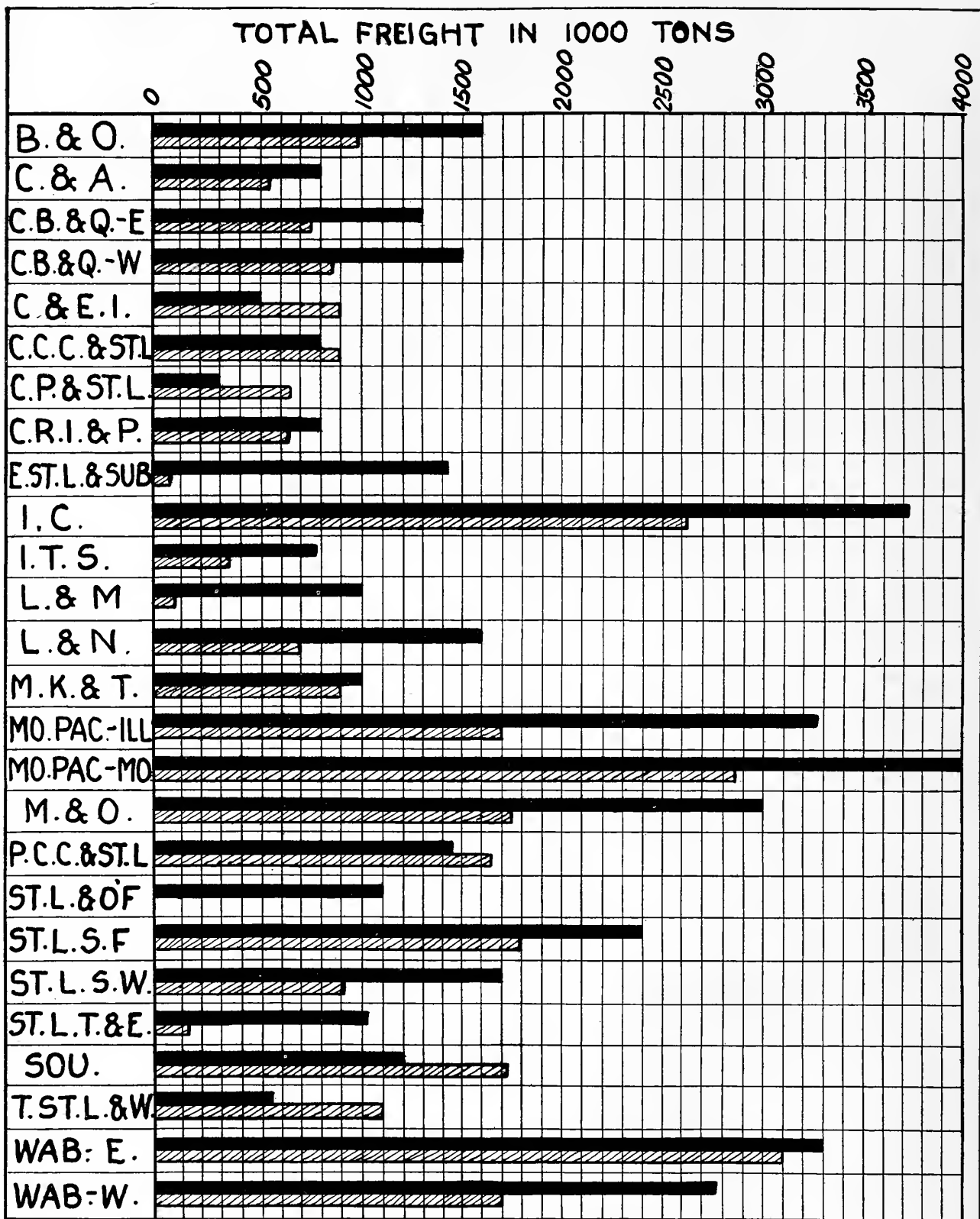
Loaded locally.....44,967

Unloaded locally.....65,354

Total.....190,552

In addition there was a movement of empty cars amounting to nearly 60 per cent of the loads.

Some of the cars that were interchanged did not cross the river. The number of loaded and empty freight cars that were handled across the river in October, 1920, is shown in Table XIII.



INBOUND FREIGHT

OUTBOUND FREIGHT

**TONS OF FREIGHT HANDLED IN AND OUT OF
ST. LOUIS - EAST ST. LOUIS TERMINALS BY ALL RAILROADS
ENTIRE YEAR - 1920.**

INCLUDES LOCAL AND THROUGH FREIGHT

**C. E. SMITH & Co.
CONSULTING ENGRS.
ST. LOUIS.**

Fig 62—Freight Handled In and Out of St. Louis—East St. Louis Terminals—1920.

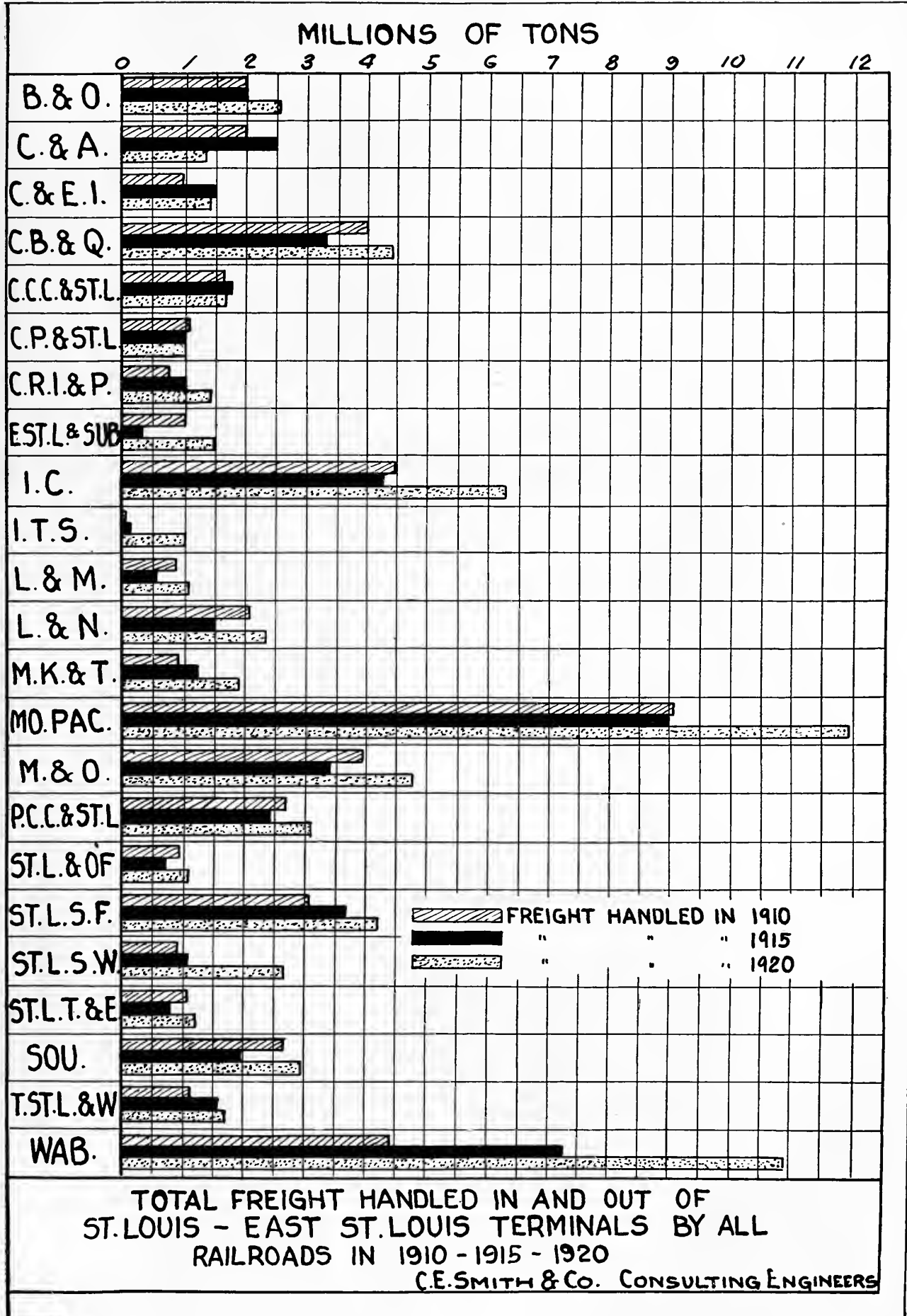


Fig. 63—Freight Handled in 1910-1915 and 1920.

TABLE XI—STATEMENT SHOWING NUMBER AND PERCENTAGE OF FREIGHT CARS LOADED AND UNLOADED AT INDUSTRIES AND TEAM TRACKS MONTH OF OCTOBER, 1920.

LOCATION	Inbound		Outbound		Total	
	No.	Per Cent	No.	Per Cent	No.	Per Cent
St. Louis River Front—						
North of Merchants Bridge.....	1,128	2.1	452	1.7	1,580	2.0
Merchants Bridge to Municipal Bridge....	8,713	16.5	3,149	11.7	11,862	14.8
Municipal Bridge to Bluff, South St. Louis..	5,099	9.6	2,798	10.3	7,897	9.9
Carondelet	808	1.5	771	2.9	1,579	2.0
Terminal Belt and Wabash—						
North St. Louis to Delmar Avenue.....	2,258	4.3	904	3.3	3,162	4.0
Terminal Outer Belt—						
Olivette to Maplewood.....	602	1.1	977	3.6	1,579	2.0
Mill Creek Valley—						
Seventh Street to Forest Park.....	6,168	11.7	1,724	6.4	7,892	9.9
Missouri Pacific and Frisco—						
Grand Avenue to Maplewood.....	4,546	8.6	931	3.4	5,477	6.8
Oak Hill Branch.....	1,148	2.2	421	1.6	1,569	1.9
Total	30,470	57.6	12,127	44.9	42,597	53.3
East St. Louis and East Side—						
Granite City and Madison.....	4,635	8.8	2,472	9.1	7,107	8.8
Brooklyn to Coke Plant.....	1,572	3.0	867	3.2	2,439	3.0
Stock Yards.....	8,247	15.6	5,888	21.8	14,135	17.7
East St. Louis.....	7,268	13.7	4,786	17.7	12,054	15.1
South of East St. Louis.....	686	1.3	893	3.3	1,579	2.0
Total	22,408	42.4	14,906	55.1	37,314	46.7
Grand Total.....	52,878	100.0	27,033	100.0	79,911	100.0

TABLE XII—STATEMENT SHOWING NUMBER OF CARLOADS OF FREIGHT HANDLED IN OCTOBER, 1920.

	East Side	West Side	Total
Through carloads brought in by all lines for through movement.....	60,201	20,030	80,231
Cars loaded at freight houses	6,060	10,724	16,784
Cars loaded at industries and team tracks.....	15,356	12,827	28,183
Cars unloaded at freight houses	5,723	5,823	11,546
Cars unloaded at industries and team tracks.....	22,838	30,970	53,808
	110,178	80,374	190,552

TABLE XIII—STATEMENT SHOWING NUMBER OF LOADED AND EMPTY FREIGHT CARS CROSSING MISSISSIPPI RIVER AT ST. LOUIS BASED ON OCTOBER, 1920, BUSINESS.

	Carloads	Empty Cars
Eastbound	41,584	31,832
Westbound	51,032	20,828
Total	92,616	52,660

Grand total loaded and empty cars crossing river, 145,276.

Of the carloads handled in and out of the St. Louis-East St. Louis terminals by twenty-three railroads, the proportion loaded and unloaded locally on each railroad of the total

handled by each railroad varies considerably, but as a whole the situation is as follows:

Number of carloads to and from own terminals.....	37,268	15.1%
Number in interchange.....	209,363	84.9%
Total in and out of all railroads	246,631	100.0%

The proportion of local cars to interchange cars is not the same on all railroads. This may be seen by comparing the short coal roads with a trunk line such as the C. B. & Q.

The short coal roads handle practically no carloads inbound for unloading nor outbound

CARLOAD FREIGHT—VOLUME AND DISTRIBUTION

TABLE XIV—STATEMENT SHOWING NUMBER OF CARLOADS HANDLED BY EACH RAILROAD LOCAL TO ITS OWN TERMINALS AND IN CONNECTION WITH OTHER RAILROADS MONTH OF OCTOBER, 1920.

Railroads	Inbound			Outbound			From Other Lines for		Total	Per Cent
	For Unloading on Own Lines	No.	Per Cent	For Delivery to Other Roads	No.	Per Cent	Local Delivery	Loaded Locally for Other Lines		
B. & O.....	549	11.4		4,292	88.6	9.9	264	546	10,179	3.7
C. & A.....	460	8.6		4,905	91.4	7.4	82	81	11,408	4.1
C. B. & O.....	1,708	14.6		10,067	85.4	23.2	1,127	318	23,309	8.4
C., C. C. & St. L.....	2,034	35.3		3,739	64.7	11.2	104	111	10,897	3.9
C. & E. I.....	470	17.6		2,197	82.4	6.9	.....	.....	5,762	2.1
C., P. & St. L.....	128	8.1		1,453	91.9	12.8	58	.....	3,815	1.4
C., R. I. & P.....	154	5.9		2,473	94.1	21.4	169	92	5,400	2.0
E. St. L. & Sub.....	.....	.....		2,824	100.0	.....	.....	.....	2,824	1.1
I. C.....	1,236	11.2		9,523	88.8	16.9	95	19	23,639	8.6
I. T. S.....	172	36.0		307	64.0	51.8	126	7	1,456	0.5
L. & M.....	.....	.....		2,334	100.0	.....	.....	.....	2,334	0.8
L. & N.....	454	9.9		4,144	90.1	23.8	377	58	8,317	3.0
M., K. & T.....	243	7.0		3,222	93.0	24.3	578	62	8,544	3.1
Mo. Pac.....	3,397	14.5		19,960	85.5	18.6	8,560	3,002	53,517	19.6
M. & O.....	388	8.2		4,320	91.8	18.5	84	9	8,778	3.2
Penn.....	1,609	27.0		4,375	73.0	11.4	772	869	13,753	5.0
St. L. & O'F.....	.....	.....		1,946	100.0	.....	.....	.....	1,946	0.7
St. L.-S. F.....	539	6.1		8,302	93.9	23.2	2124	295	17,374	6.3
St. L.-S. W.....	120	2.7		4,418	97.3	23.3	126	.....	8,164	3.0
St. L., T. & E.....	.....	.....		3,201	100.3	.....	.....	.....	3,201	1.2
Southern.....	932	13.8		5,834	86.2	25.0	1,208	973	12,516	4.5
T., St. L. & W.....	400	13.8		2,494	86.2	3.1	48	9	7,574	2.8
Wabash.....	2,625	19.3		10,948	80.7	20.1	5,373	570	30,220	11.0
Total.....	17,618	13.1		117,278	86.9	17.6	21,275	7,011	274,927	100.0

Inbound.....	No. of Carloads for Own Lines		No. of Carloads in Interchange		Per Cent
	No.	Per Cent	No.	Per Cent	
Outbound.....	17,618	13.1	117,278	86.9	
	19,650	17.6	92,085	82.4	
	37,268	15.1	209,363	84.9	

loaded on their own rails; practically all the business they handle is interchange.

The C. B. & Q. brought in 1,708 (14.6 per cent) for unloading on its own lines and 10,067 (85.4 per cent) for interchange with other roads; outbound it handled 2,432 cars (23.2 per cent) loaded on its own rails and 7,747 (76.8 per cent) received from other lines. The percentages are different for each railroad.

On the average, out of every 100 cars brought into the terminals, 13.1 are unloaded on the line that brings them in and 86.9 are turned over to other lines; out of every 100 cars taken out, 17.6 are loaded on the line that handles them out and 82.4 are received from other lines. The average of in and outbound is 15.1 and 84.9 carloads, respectively.

At the present time the 84.9 cars that might better be kept out of the local terminals of the roads handling them are handled in practically the same facilities as the 15.1 that must be handled in the local terminals. The Committee directed its studies to keeping the 84.9 cars

out of the local terminals where they do not belong.

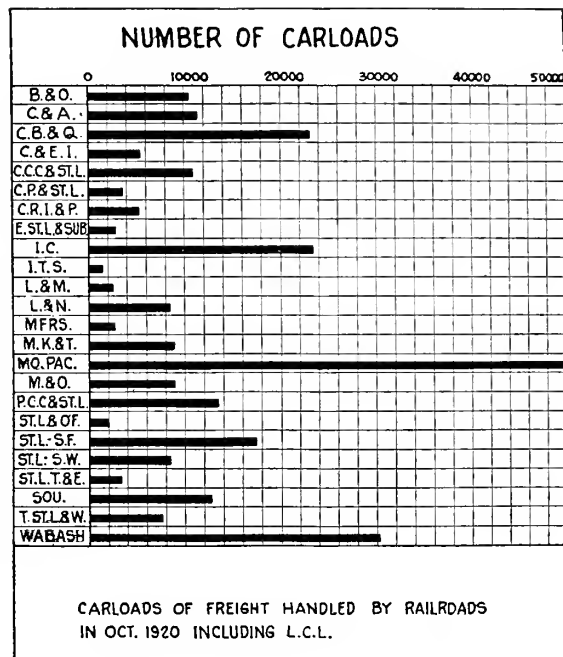


Fig. 65—Number of Carloads of Freight Handled by Each Road, October, 1920.

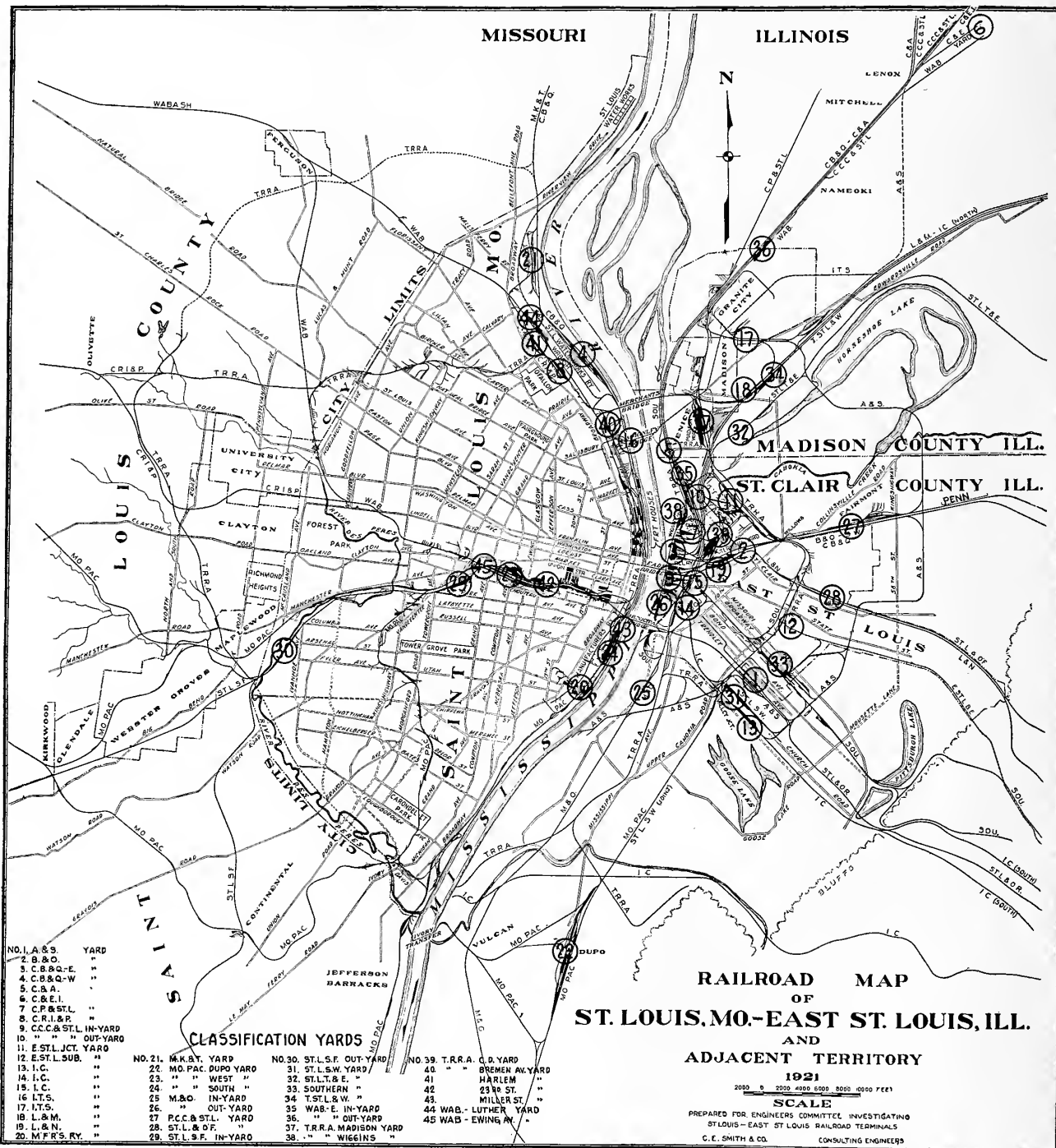


Fig. 66—Classification Yards.

CARLOAD FREIGHT—PRESENT METHOD OF HANDLING FREIGHT CARS

At the present time railroads break up their inbound trains and classify their inbound freight in their own yards for delivery; (a) on their own rails; (b) to other railroads with which they have direct connections; (c) to one or more of the three transfer agencies of the Terminal Railroad Association, viz: Wiggins Ferry Co., St. Louis Merchants Bridge Terminal Railway Co. and the Terminal Railroad; (most roads classify and deliver to all three agencies) and (d) to other transfer agencies such as the Alton and Southern and the Venice and Carondelet Belt of the Southern Railway.

After cars are classified by the road that brings them in, cars for other roads are set on interchange tracks designated by the other roads in which service both delivering and receiving roads perform a great deal of light engine mileage, consisting of engines returning without cars from interchange tracks after making deliveries. These interchange tracks are generally inadequate especially during heavy business when they are most needed. Their inadequacy at such times contributes directly to terminal congestion.

With the exception of freight interchanged in St. Louis that does not cross the river, and certain live and perishable freight, the three agencies of the Terminal Railroad Association take the cars from their connections to three principal clearing yards on the East Side—Madison Yard, Wiggins Yard and Terminal Yard near Relay, where they are again classified for delivery to other roads and to industrial districts on the Terminal lines. Cars are then handled in direct transfer movements between these yards and the interchange tracks of the individual railroads.

The receiving roads take the cars from the interchange tracks and again classify them for

local delivery and for movement beyond in road trains.

Thus, except for freight handled over direct connections between railroads and live and perishable freight, all interchange freight handled by the intermediate switching agencies is classified at least three times. This work is done in over forty freight yards which are so located that there is a great deal of excess engine and car mileage in back hauls and much delay on account of railroad grade crossings and interference with and by through movements, local switching and passenger trains.

In the preceding pages the method of operation of each railroad is set forth in detail, accompanied by a graphic diagram for each road showing the route and density of the carload freight movements. In addition Appendix E is a tabulation showing the number and route of carloads interchanged between each road and each other road for local delivery and through movement, during the month of October, 1920.

Each tabulation and diagram show the number of carloads inbound and outbound, total number of cars loaded on each line for delivery to other lines, and carloads received from other lines for local delivery on the line under discussion; the diagrams also show the route and density, the latter also indicated by numbers, where of sufficient interest or value, of the movement of all carloads handled by each road.

The yards in which the railroads break up and make up their trains are shown on the diagrams. Also by numbers are indicated the location of interchange tracks which are the extreme limits to which their engines go in delivering cars to and receiving cars from other roads. Beyond those interchange tracks the cars are moved by the engines and over the tracks of other railroads.

These diagrams show that there is a large amount of lost motion in handling freight cars in the terminals. Indirect movements involving five to ten miles extra distance through congested districts are not unusual.

Movements over the Terminal, which uses the Eads Bridge and tunnel between "C. D." Yard, near Relay, East St. Louis, and the Mill Creek Valley, near the St. Louis Union Station, are fairly direct. Movements over the Wiggins and the Merchants are quite round-about.

Even casual observation of the diagrams will indicate that a very large amount of freight that is interchanged by the Wiggins Ferry in East St. Louis, could be saved a great deal of distance and delay by being handled through outer yards and over outer belt lines. This is well illustrated by the Pennsylvania and Baltimore and Ohio freight from the East and by the Wabash, Chicago and Alton, and Big Four freight from the North. The diagrams also indicate that a great volume of freight now transferred twelve to fifteen miles over the Merchants Bridge between railroads in the vicinity of Valley Junction and the Mill Creek Valley and South St. Louis could be moved over the Municipal Bridge in three to five miles. This is well illustrated by the St. Louis and O'Fallon and the East St. Louis and Suburban coal.

On the other hand much freight that is now handled across the Eads Bridge could be handled more expeditiously over the Merchants Bridge if put through outer yards.

The removal of interchange freight from the congested district in the vicinity of Relay Depot will expedite the handling of local business in that district.

Empty Cars

Although empty cars are handled in the same trains with loaded cars, it was found to be impracticable to follow the movements of empty cars for each railroad, as empty cars do not all have the same definite routing as loaded cars, but are continually taken where found and set for loading. However, information was available as to the interchange of empty cars between railroads and a composite diagram

was prepared to show the routes and density of movements of the empty cars interchanged.

This composite empty car diagram indicates the same degree of unnecessary mileage and additional handling as evidenced by the diagrams showing carload movements, much of which can be avoided, as set forth later in this report.

Many of the empty cars were special cars that had to be moved for loading in one direction, consisting of coal cars returning to the mines, stock cars coming from the stock yards, refrigerator cars going to the packing houses, tank cars for oil, acids and other liquids, poultry cars, and other cars for special commodities, of which the normal movement empty in one direction can not always be avoided.

A considerable portion of the movement, however, consisted of standard flat, gondola and box cars returning to home lines, in nearly balanced movements in each direction, that could be entirely avoided by pooling such cars under proper control.

It seems to be an unnecessary waste for empty cars of the same design and capacity to be moving in both directions at the same time, just because of individual ownership. As this is not a local question, however, but one of national scope, the Committee has no recommendations to offer as to the handling of empty cars.

Composite Diagram of Movements of Carload Freight

A composite diagram was also prepared to show the movement of all carloads shown on the diagrams of the individual railroads. This emphasizes the appearance of congestion, additional mileage over detours and unnecessary handling indicated by the individual diagrams and by the descriptions of the methods of the railroads in handling freight cars within the terminals.

The congestion and interference are particularly noticeable in the vicinity of Bridge Junction and Relay Depot in East St. Louis, where there are twenty-five railroad grade crossings in a distance of one mile, over which nearly one hundred passenger trains daily and practically all cars interchanged with the Terminal

and Wiggins Ferry on the east side are handled. The congestion and delay can be minimized by reducing the number of grade crossings and by keeping out of this district cars that can be handled more directly over other routes.

The present practice of the railroads, as indicated by the routing and density diagrams, is the outgrowth of early conditions when traffic was light, and the only river crossings were the Eads Bridge and the car ferries of the Wiggins Ferry Co. near the Eads Bridge. Later on when the Merchants Bridge was used for a large amount of traffic, and extra mileage and delay in terminals was not so expensive and serious as at present, each company has added to the facilities in its old yards, to keep pace with the increase in business, until all available space was used up, or until other objectionable conditions, such as delay through congestion, and increased operating expenses, resulting therefrom, required other facilities.

In response to such conditions, the Pennsylvania Railroad has established a modern outer yard just outside the Illinois Transfer Outer Belt on the east side. The Southern Railway has also moved out within recent years to its Coapman Yard just outside the Illinois Transfer Railway. The C. & E. I. never had an inner yard, but has an outer yard

north of Granite City. The C. C. C. & St. L. Railway has property for such an outer yard north of Mitchell, Ill., which is under construction. The Wabash has built and placed in operation an outer yard for certain of its traffic north of Granite City. The T. St. L. & W. Railway and the Litchfield and Madison Railway have built outer yards near Madison. The St. L. S. W., which never had an inner yard, has constructed an outer yard near Valley Junction. The I. C., in adding to its inner yard facilities, has moved out beyond Valley Junction, but has not built a thoroughly modern outer yard. The Missouri Pacific has a very extensive hump yard at Dupou, south of East St. Louis, which was built shortly after the construction of the Missouri Pacific Illinois line, in 1903.

The congested condition of the inner yards of those roads that have not yet built outer yards is such that within the next few years many roads must increase their inner yards or construct outer yards, and those which have outer yards will probably add to their present facilities. The Committee believes that any additional expenditures for yards or interchange facilities in future, should be made according to a comprehensive plan, rather than haphazard to meet the immediate needs as heretofore.

CARLOAD FREIGHT—PROPOSED OPERATION THROUGH OUTER GROUP YARDS

In order to eliminate unnecessary classifications, and unnecessary mileage, and to minimize delays, the Committee recommends that the present system, under which railroads classify cars in their own yards for direct connections and for clearing cars for other connections through the Madison Yard, the Wiggins Yard, and the East St. Louis Yard of the Terminal Railroad Association, be changed and that there be substituted therefor direct transfer movement between outer classification yards and the individual railroads.

As there is not a sufficient number of cars interchanged each day between each railroad and every other railroad to warrant a direct movement in every case, the Committee recommends the assembling of interchange business in several outer group yards, as shown on the map accompanying this report.

The roads to which each yard would be most convenient and the number of carloads handled in and out of the St. Louis-East St. Louis terminals in October, 1920, by the roads in each group are given in Table XV.

TABLE XV—NUMBER OF CARLOADS PASSING THROUGH LOCATIONS OF PROPOSED GROUP YARDS AND RAILROADS CONVENIENT TO EACH GROUP YARD.

Yard No. 1, North of Granite City:

26,500 carloads in.
25,551 carloads out.
C. & A.
C. C. C. & St. L.
C. & E. I.
C. B. & Q.
Wabash (East).
C. P. & St. L.

Yard No. 2, Near Madison:

10,800 carloads in.
11,286 carloads out.
I. C. (North).
L. & M.

T. St. L. & W.
St. L. T. & E.

Yard No. 3, East of Willows:

24,300 carloads in.
15,254 carloads out.
Pennsylvania.
B. & O.
L. & N.
C. B. & Q. (East).
St. L. & O'F.
E. St. L. & Sub.

Yard No. 4, East of Valley Jct.:

16,000 carloads in.
9,727 carloads out.
Sou.
St. L. & O. R.
I. C. (South).

Yard No. 5 at Dupo:

22,200 carloads in.
16,195 carloads out.
Mo. Pac.
M. & O.
St. L. S. W.

Yard No. 6, North St. Louis:

18,500 carloads in.
15,193 carloads out.
M. K. & T.
C. B. & Q. (West).
Wabash (West).
C. R. I. & P.

Yard No. 7, West Ivory:

4,800 carloads in.
2,277 carloads out.
Mo. Pac.

Yard No. 8, Near West City Limits:

15,500 carloads in.
15,128 carloads out.
Mo. Pac.
St. L.-S. F.

The actual number of carloads that would be handled through the group yards would be somewhat less than the amounts stated, as the figures include cars loaded and unloaded locally on the lines of the roads in each group which might be handled in the local yards of the railroads and not in the group yards.

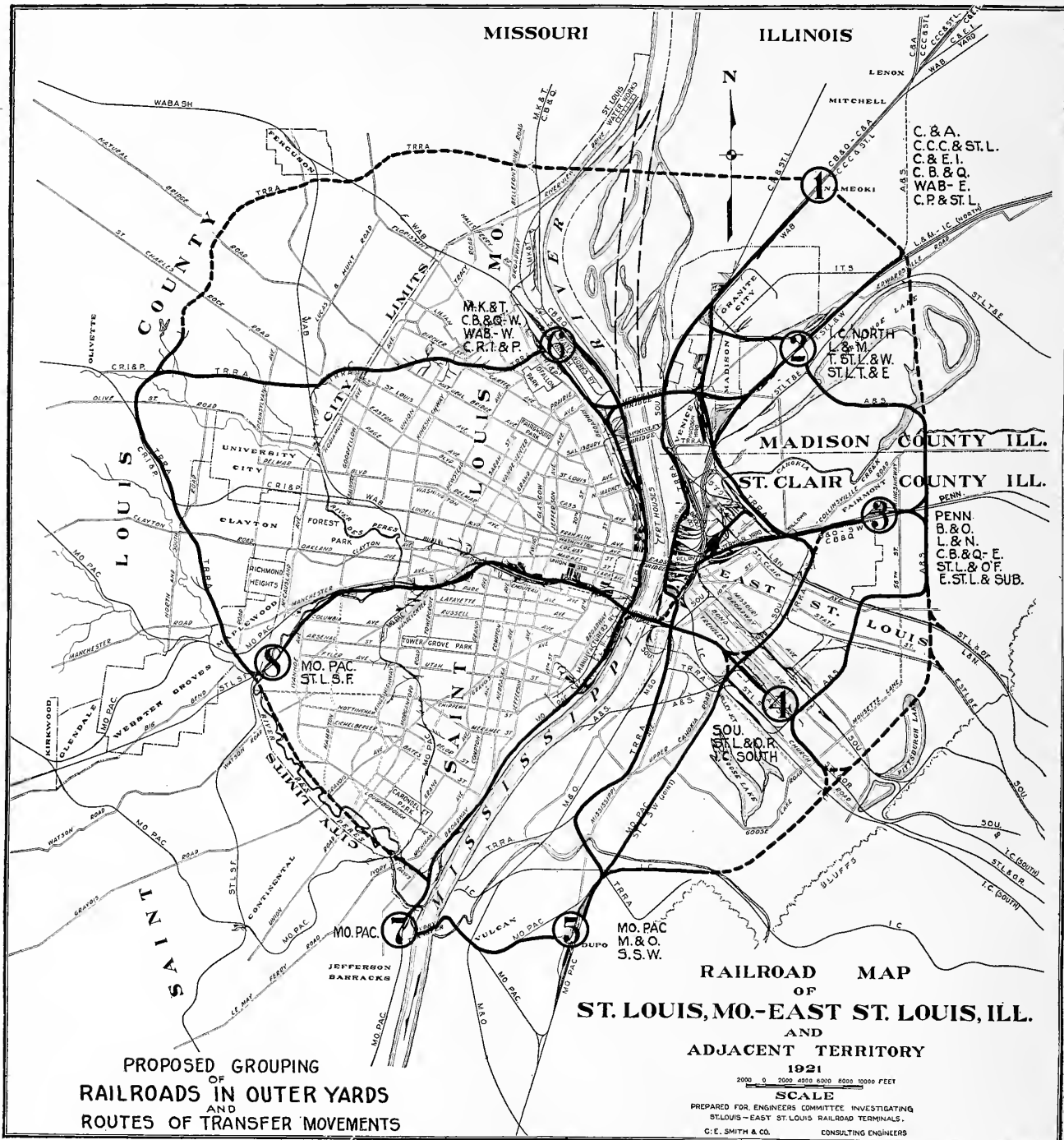


Fig. 70—Proposed Grouping of Railroads in Outer Yards.

TABLE XVI.—TABULATION SHOWING NUMBER OF CARLOADS FROM AND TO PROPOSED GROUP YARDS ON BASIS OF CARLOADS HANDLED BY ALL RAILROADS, OCTOBER, 1920.

TO		Group No. 1		Group No. 2		Group No. 3		Group No. 4		Group No. 5		Group No. 6		Group No. 7		Group No. 8		Roads in M.C.Valley		Roads in S. St. Louis		T. R. R. A. E. Side		T. R. R. A. W. Side		Stock Yds. A.&S.,I.T.S.		Total From Each Group		Total Thru & Local
FROM		For Thru Movement	For Local Delivery	For Thru Movement	For Local Delivery	For Thru Movement	For Local Delivery	For Thru Movement	For Local Delivery	For Thru Movement	For Local Delivery	For Thru Movement	For Local Delivery	For Thru Movement	For Local Delivery	For Thru Movement	For Local Delivery	For Thru Movement	For Local Delivery	For Thru Movement	For Local Delivery	For Thru Movement	For Local Delivery	For Thru Movement	For Local Delivery	For Thru Movement	For Local Delivery	For Thru Movement	For Local Delivery	
Group No. 1.....		313	3,767	520	6	1,796	216	1,101	280	2,553	200	1,528	1,674			2 055		1,933		624		2,107		3,576	26	2,230	9,892	16,613	26,505	
Group No. 2.....		346	47	19	671	112	21	721	127	766	107	1,245	612			801		1,282		490		714		1,725	1	1,001	4,011	6,797	10,808	
Group No. 3.....		3,606	11	166	1	323	2,189	362	175	1,895	611	2,480	596			1,967		2,093		1,098		1,550		3,749	4	1,417	10,803	13,490	24,293	
Group No. 4.....		2,502	75	2,600		385	155	47	2,070	1,627	86	997	792	12		722		489		343		721		1,381		1,139	8,892	7,251	16,143	
Group No. 5.....		6,542	12	2,304	11	2,366	154	1,930	44	11	418	835	217	765		169		142		2,144		1,335		545	50	2,177	14,972	7,199	22,171	
Group No. 6.....		1,608	10	1,211	2	1,986	161	1,079	123	1,140	69	229	3,956	275		503		922		728		748		2,399	31	1,313	8,062	10,431	18,493	
Group No. 7.....		690	10	185		350	76	125	11	1,369	4	184	271			141		154		240		165		746	35	17	3,079	1,694	4,773	
Group No. 8.....		2,925	69	935	43	1,586	294	645	57	677		558	322			243		2,695		543		595		1,329	123	1,812	7,692	7,759	15,451	
Roads in Mill Creek Valley.....		759	14	273	17	351	67	110	23	167	50	624	58	240		3,491				26		13		429	21		6,036	697	6,733	
Roads in South St. Louis.....		249		45		111		62		1,409		481	162	347		168		44				45		160	10		2,882	411	3,293	
T. R. R. A., East Side.....		1,116	106	308	5	852	167	260	66	622	225	440	165	66		435		470		75		1,213		406	68	107	4,167	3,005	7,172	
T. R. R. A., West Side.....		1,653	20	652		988	30	701	38	690	15	492	234	106		425		328		149		778		1,478		75	5,707	3,145	8,852	
Stock Yds. A. & S., I. T. S. Loaded Locally on Roads for Outbound Movement Over Own Lines.....		1,362		741		2,095	43	713	22	415		122	27			836		42		16		77		238		177	6,284	642	6,926	
Total to Each Group.....		1,880		1,327		1,953		1,871		2,854		4,978		466		3,172										438		18,939		18,939
Total to Each Group.....		25,551	4,141	11,286	756	15,254	3,573	9,727	3,036	16,195	1,785	15,193	9,086	2,277		15,138		10,594		6,476		10,051		18,161	807	11,465	111,418	79,134	190,552	

Note for Comparison:
During October, 1920, 39,298 Carloads Were Handled in Madison Yard.

For comparison with the preceding figures it is interesting to note that during October, 1920, about 40,000 carloads were handled through Madison Yard in both directions. The proposed group yards could be made more efficient than Madison Yard as there is ample room at the proposed locations of group yards to provide efficient layouts that will permit the progressive movement of cars without retrograde or switchback movements.

Proposed Classification and Transfer of Inbound Interchange Freight

All cars brought in by any road for delivery to any other road would be placed on the receiving tracks of the appropriate group yard.

The management of the group yard, which might be controlled by those roads using the group yard, would classify cars brought in by all roads on to classification tracks for direct delivery to every other railroad.

In addition to classifications for individual railroads, it would probably be found desirable to make additional classifications in the group yards for local cars consigned to various districts within the terminals and those cars handled in transfer runs from the classification tracks of the group yard, to the local district yards serving the industries in the respective districts.

By grouping roads conveniently located in group yards, interchange freight could be handled in solid transfer movements without going through intermediate clearing yards as at present, thus saving one interchange and one classification of a large portion of the cars now handled by the Terminal Railroad Association.

It is thought that the present average time of three days for through cars and four days for local cars can be reduced to one-half this time by such grouping and direct delivery.

A composite diagram showing the routes and density of carload movements as proposed is included in this report; for ready comparison by observation, it is shown at the same scale as the composite diagram of the present movements. A casual study will indicate the extent to which the proposed operation will

eliminate unnecessary handling and delay of cars.

The composite diagram shows the volume of each road movement outside the group yards; the local movement of each road between the group yards and the local terminals, and the proposed routes and volume of transfer movements of interchange freight.

On the east side direct movements between Yard No. 1 and Yard No. 5 are shown over the main line of the C. & A. and C. C. C. & St. L. between Granite City and Venice (to be supplemented by an independent transfer route when business requires) and the Wiggins Ferry between Venice and Dupo.

Intermediate movements between Yards Nos. 1, 2, 3, 4 and 5 except direct between Nos. 1 and 5 are shown over the Alton & Southern present tracks (to be double tracked and supplemented by the connections shown by broken lines, when conditions warrant), although some of those movements might be made over the Illinois Transfer Railway and the V. & C. Belt of the Southern Railway.

Movements between Yard Nos. 1, 2, 3, 4 and 5 on the east side of the river and yards on the west side of the river are shown over the Illinois Transfer Railway, which would be the "Bridge Route" connecting with the Merchants and Municipal bridges.

Alternate routes between the Municipal Bridge and Yard Nos. 1, 2 and 3 would be afforded by the elevated passenger tracks through Bridge Junction and Relay Depot. An additional route that would provide better internal circulation between the Wiggins Ferry tracks on the river front could be provided by connecting the Wiggins Ferry tracks with the McKinley Bridge at Venice and in North St. Louis.

In addition to the transfer movements between the designated group yards, movements are also shown between those yards and local districts in which large numbers of cars are loaded and unloaded, as the Mill Creek Valley, South St. Louis, North St. Louis, etc.

On the West Side transfer movements between Yards Nos. 6 and 7 are shown along the river front; which is also the route indicated

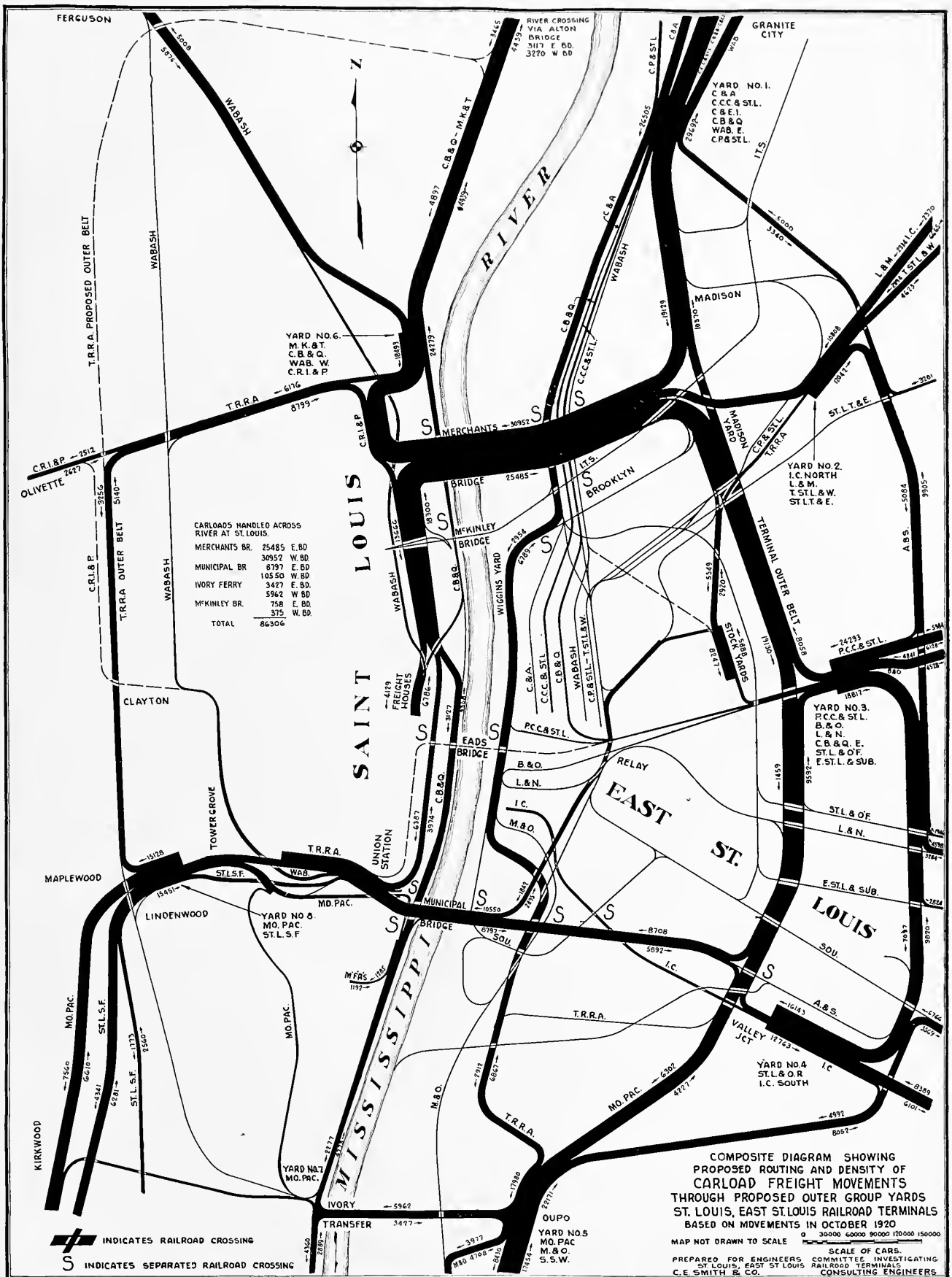


Fig. 71—Composite Carload Freight Diagram—Proposed Rerouting.

for the industrial districts, in Mill Creek Valley and South St. Louis. For through traffic of the Missouri Pacific and the St. L. S. F., the Municipal Bridge and Mill Creek Valley are used between Yards Nos. 3, 4 and 5 on the east side of the river and Yard No. 8 on the west side; the Terminal Outer Belt and Merchants Bridge between Yards Nos. 1 and 2 on the east side and Yard No. 8 on the west side; the Merchants Elevated and Mill Creek Valley route would also be available for the latter movement, at least until both the Missouri Pacific and St. L.-S. F. moved out to Yard No. 8.

The routes for transfer movements according to the proposed plan would make no difference in the movements by the Alton Bridge or by the Ivory Ferry, although it is possible that the movements over the proposed routes and the possibility of the Missouri Pacific and the Burlington crossing the bridges with their own engines might result in less cars moving via Alton Bridge and Ivory Ferry. Neither is any change shown in the number of freight cars moving across the McKinley Bridge, although it is possible to connect that bridge in such a way that many more cars could use it conveniently.

In the proposed method of operation all freight trains are removed from the Eads Bridge and the cars handled by the most direct route over the Municipal and Merchants bridges with the following result:

October, 1920:	Proposed:
Merchants .....49,497	Merchants .....56,437
Eads .....26,229	Municipal .....19,347

Freight Local to Railroads' Own Terminals

It would not be necessary for any road to put its local business through the group yard that would be used for its interchange traffic, although roads would have the option of doing so if convenient.

Carloads for delivery to industries, team tracks and freight houses local to any railroad, might be placed in separate trains at the last division point outside of St. Louis, and such trains run right by the group yard

to its local yard. In fact, such trains might fill out tonnage by handling interchange cars to be set out at the group yard.

Local cars, however, might be handled through the group yard in the same manner as interchange cars, the movement between the classification tracks of the group yard, and the local yard of the railroad being made as a transfer movement.

The local yards of the railroads would be continued as inner yards for assembling and distributing the railroads' local business.

Outbound Freight

There would not be the same advantage in handling outbound freight in the same manner; it is thought that each road will desire to control the making up and departure of its own trains. However, departure facilities might be added to the group yards, although it would seem to be preferable to classify the cars for individual railroads where picked up and deliver them direct to their outbound yards.

Each road could maintain and operate an outbound departure yard, preferably as close as possible to its inbound group yard. The outbound departure yard would require, in addition to the tracks for making up road trains, sufficient receiving tracks for assembling the transfer movements of interchange freight from the group yards, from local yards within the district, and cars loaded locally on the rails of the individual railroads.

Proposed Use of Present Facilities

The Committee does not recommend that any other changes be made in the control or operation of the present local terminal facilities of any railroad, but that each road continue to serve its local territory as at present. However, some pooling or exchange of facilities may be desirable for other reasons, such as revising the freight house layouts on the East St. Louis river front for the purpose of reducing the number of railroad grade crossings or for other reasons.

The Committee does not propose that entirely new Group Yards be constructed. Loca-

tions have been suggested where railroads now have at least the nucleus of such yards, and in some cases nearly ample facilities. It is intended that present facilities shall be modified and developed to suit the proposed grouping, with such additions as may be necessary.

No additional transfer routes are proposed. The dotted lines shown on the map are for future development; the solid black lines indi-

posed plan would have covered 1,303,980 car miles, a saving of 567,940 car miles.

To this saving should be added the saving in empty car mileage. Empty car movements were 45.6 per cent in October, 1920, which seems a normal percentage in this district. Adding that percentage makes the total saving 896,450 car miles per month within the terminal district, approximately 10,000,000 car miles per year.

TABLE XVII—COMPARATIVE CAR MILES OF LOADED AND EMPTY FREIGHT CARS IN ST. LOUIS-EAST ST. LOUIS RAILROAD TERMINALS BY PRESENT AND PROPOSED METHODS OF CLASSIFICATION AND INTERCHANGE BASED ON OCTOBER, 1920, MOVEMENT.
(CARS NOT INTERCHANGED NOT INCLUDED.)

Roads	Road Haul Between Group Yard Locations and Present Yard Car Miles Per Month Present	Terminal Haul of In- bound Connecting Line and Outbound Cars Loaded Locally on Other Than Trunk Lines		Decrease in Loaded Car Miles Per Month	Per Cent of Empties to Loads	Decrease in Empty Cars Miles Per Month	Total De- crease in Car Miles Per Month
		Car Miles Per Month Present	Car Miles Per Month Proposed				
B. & O.	22,601	36,510	41,229	17,882	75.0	13,412	31,294
C. & A.	72,464	33,072	54,280	51,256	34.0	17,427	68,683
C. B. & O. (East)	90,073	44,983	53,964	81,092	45.0	41,769	132,572
C. B. & O. (West)		29,371	19,660	9,711			
C. & E. I.	20,308	39,071	33,860	*15,087	47.0	*7,091	*22,178
C. C. & St. L.	70,077	30,353	40,277	60,153	72.0	43,310	103,463
C. P. & St. L.	30,830	13,172	17,559	26,443	28.0	7,404	33,847
C. R. I. & P.		18,072	18,687	*615	70.0	*431	*1,046
E. St. L. & Sub.	2,750	28,884	23,968	2,166	100.0	2,166	4,332
I. C.	80,520	75,952	54,621	101,851	32.0	32,592	134,443
I. T. S.		3,109	3,260	*151	40.0	*60	*211
L. & M.	2,325	20,404	20,448	2,281	85.0	1,939	4,220
L. & N.	7,736	37,417	38,246	6,907	50.0	3,454	10,361
Manufacturers		17,173	8,412	8,761	23.0	2,015	10,776
M., K. & T.	10,541	34,005	23,650	*186	76.0	*141	*327
Mo. Pac. (East Side)		164,053	159,526	4,527	38.0	41,975	152,435
Mo. Pac. (West Side)	128,229	156,608	178,904	105,933			
M. & O.	48,053	26,426	63,266	11,213	53.0	5,943	17,156
P. C. & St. L.		68,607	55,273	13,334	60.0	8,000	21,334
St. L. & O'F.	1,946	18,986	14,882	2,158	100.0	2,158	4,316
St. L. S. F.	30,717	100,831	122,042	9,506	53.0	5,038	14,544
St. L. S. W.		40,863	28,457	12,406	80.0	9,925	22,331
St. L., T. & E.	3,201	24,083	23,378	3,906	80.0	3,125	7,031
Southern	4,245	63,878	62,288	5,835	62.0	3,618	9,453
T., St. L. & W.		29,436	28,327	1,109	51.0	566	1,675
Wabash (East)	61,599	52,175	68,997	44,777	45.0	20,150	64,927
Wabash (West)		47,291	46,519	772	32.0	247	1,019
Total	617,135	1,254,785	1,303,980	567,940	45.6	258,510	896,450

*Denotes increase in Car Miles.

cate present tracks that the Committee recommends be used in transfer movements. St. Louis and East St. Louis are now well supplied with inner and outer belt lines for transfer movements, but in future additional construction will be required to complete and supplement the present facilities.

Prospective Savings in Car Movements

Within the terminal district embraced by the group yards, the railroads handled loaded freight cars a total of 1,871,920 car miles during October, 1920, not including the mileage of retrograde and switchback movements at interchange tracks and yards.

The same business if handled via the pro-

The present mileage compared consists of the sum of the car miles in road trains between the proposed locations of the outer group yards and the inner yards of the individual railroads, and the car miles in switching movements between those yards, while the proposed mileage consists entirely of transfer movements. The costs per car mile (a) in road trains; (b) in present switching movements; and (c) in the proposed transfer movements are not directly comparable. Cost records of the Terminal Railroad Association have not been so kept that the cost per car mile of present switching movements can be determined without a careful cost study; it

is not known what the cost per car mile of the proposed transfer movements will be; therefore the saving in car miles cannot be stated in money.

There would also be saved the classification of 60,000 cars in Madison Yard, 40,000 cars in Terminal Yard, and 50,000 cars in Wiggins Yard, total 150,000 cars per month, counted once only. If counted both in and out according to usual railroad practice, the saving amounts to 300,000 cars per month.

The savings in car mileage and in the number of cars classified are not the only savings that would result from the proposed plan. Many other savings that would follow are discussed in detail in the chapter of this report entitled "Unification of Railroad Terminals." These savings include the elimination of numerous car inspections in connection with the present interchange system and the elimination of empty engine mileage, a very expensive matter at the present time.

There would be an opportunity for great economy in having a well-organized car repair department and shops at each group yard to supersede the present wasteful practice of each railroad having to maintain individual facilities.

The Committee recognizes that it is not possible, nor does it seem necessary, to finally determine all details of the grouping of railroads in outer yards, the particular railroads in each group, the designs of the yards, the transfer routes for each movement, etc., as those details can only be worked out after careful study by the representatives of the railroads involved.

Many alternatives are possible. The Illinois

Central might find some advantage, which might also be of advantage to other railroads in East St. Louis, in keeping its north and south through freight entirely outside of East St. Louis, by diverting it over an outer belt between Edwardsville and Belleville; the C. B. & Q. might also benefit itself and the entire situation by diverting its through freight over an outer belt line between O'Fallon and East Alton. Railroads north of the B. & O. might detour M. K. & T. and C. B. & Q. (west) interchange via the Illinois Terminal and Alton Bridge. The Missouri Pacific and St. L.-S. F. might find some advantage in detouring a portion of their freight south of St. Louis, crossing the Mississippi River at Ivory.

The grouping of railroads in yards, proposed in this report, may not be the last word on this feature. The St. L.-S. W. and M. & O. might use Yard No. 4 or Yard No. 5. Railroads on one side of the river might operate road trains in and out of yards on the other side. For example, any east side road doing sufficient daily interchange with the roads using Yard No. 6 in North St. Louis, might save considerable extra handling and delay by operating certain trains in and out of that yard and similarly in other cases in much the same way that the C. & E. I., an east side road, operates in and out of the St. L.-S. F. Yard in St. Louis.

The Committee recommends that the railroads appoint an "Outer Group Yard and Transfer" Committee, consisting of representatives of all the railroads, to work out the details, to the end that the present system may be superseded by the new and improved system as soon as possible.

TEAM TRACKS

The car capacity of team tracks and average daily number of carloads handled to and from team tracks in October, 1920, was as follows:

	Car Capacity	Daily No. of Cars
St. Louis and West Side.....	3,599	776
East St. Louis and East Side.....	1,369	137

Railroad officials usually consider team track facilities adequate when their capacity in any location is two to three times the daily number of cars handled to and from team tracks in that location. Some railroads consider two times sufficient because the free time is forty-eight hours and the number of cars occupying team tracks longer than that average with those unloaded in one day or less.

On the above basis the number of cars that can be handled on team tracks on both sides of the river would appear to be as follows:

	Car Capacity	Two Days Per Car	Three Days Per Car
St. Louis and West Side....	3,599	1,800	1,200
East St. Louis and East Side	1,369	685	456

On the same basis the car capacity that would be required to handle the business in October, 1920, would appear to be as follows:

	Daily No. of Cars	Two Days Per Car	Three Days Per Car
St. Louis and West Side....	776	1,552	2,328
East St. Louis and East Side	137	274	411

At first glance it would appear that the present team track capacity is excessive and

TABLE XVIII—TEAM TRACK FACILITIES AND AVERAGE NUMBER OF CARS HANDLED DAILY, OCTOBER, 1920.

West Side.			East Side.		
Road	Car Capacity	Daily No. of Cars to Team Tracks	Road	Car Capacity	Daily No. of Cars to Team Tracks
C. B. & Q.....	388	70	A. & S.	25	...
C. R. I. & P.....	102	2	B. & O.	148	2
I. T. S.....	40	...	C. & A.	43	5
L. & N.	30	12	C. B. & Q.—E.....	62	...
MFRS.	365	180	C. C. C. & St. L.....	126	10
M. K. & T.....	42	12	C. P. & St. L.....	51	14
Mo. Pac.	595	102	E. St. L. & Sub.....	41	...
Pennsylvania	50	20	I. C.	140	15
St. L.-S. F.....	154	27	I. T. S.....	69	...
St. L.-S. W.....	54	2	L. & N.....	96	9
T. R. R. A.....	1,558	300	M. & O.	44	13
Wabash—W.	221	49	Pennsylvania	143	10
Total	3,599	776	St. L. T. & E.....	14	...
			Southern	98	30
			T. R. R. A.....	104	18
			T. St. L. & W.....	50	5
			Wabash—E.	115	6
			Total	1,369	137

Car capacity given above relates to 40-ft. cars.

Report of Municipal Bridge and Terminal Commission July 6, 1906, reported team track capacity based on 36-ft. cars as follows:

All Railroads in East St. Louis, except Terminal Railroad Association, 1,517 car lengths. Terminal Railroad Association in St. Louis, 1,600 car lengths.

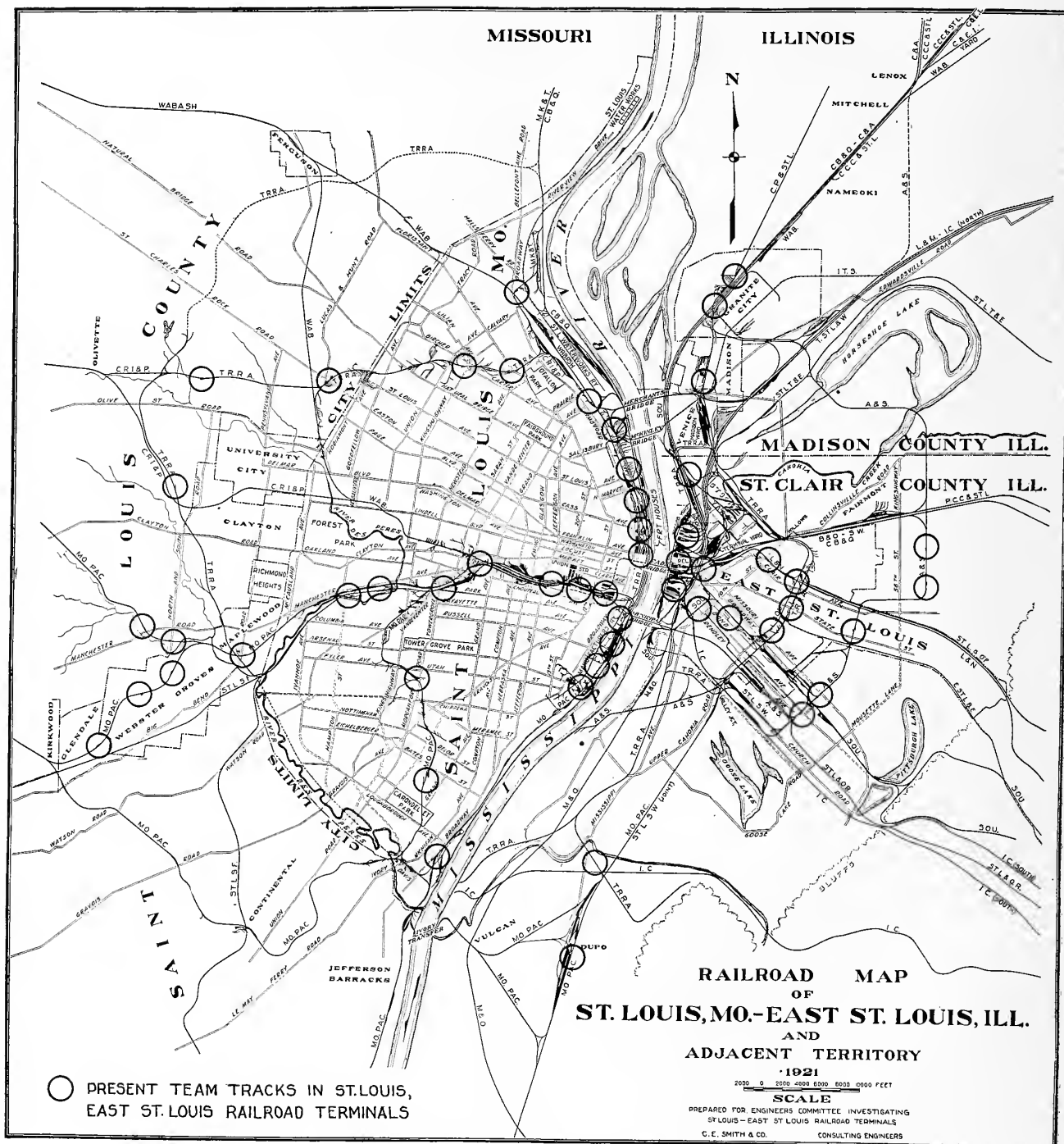


Fig. 72—Team Track Locations.

the team tracks are sufficient to handle more than the present business. These are average figures, however, and they throw no light on the adequacy of team tracks in detail.

To secure the performance indicated by the average figures would require the team track business to be distributed evenly over all team tracks, and equally on every day of the year. Manifestly this is impossible.

In report dated July 6, 1906, the Municipal Bridge and Terminals Commission reported that the total team track room of the Terminal Railroad Association in St. Louis, which was stated as 1,600 cars, was then practically the same as ten years before, and should be doubled to handle the business of the immediate future satisfactorily. The team track room of the Terminal Railroad Association in St. Louis in 1920 was 1,394 cars, a decrease instead of an increase due primarily to the withdrawal of tracks near the Union Station from team track service and using them for passenger train cars.

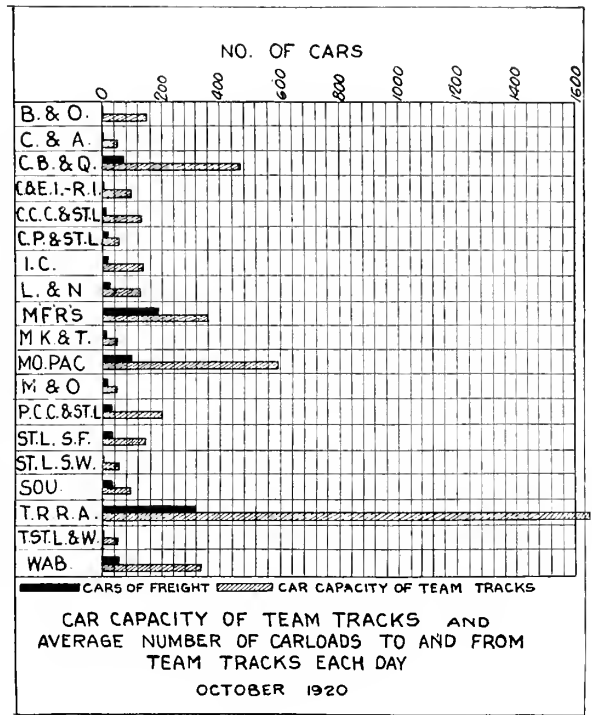


Fig. 73—Capacity and Use of Team Tracks.

TABLE XIX—TEAM TRACK LOCATIONS IN ST. LOUIS—EAST ST. LOUIS RAILROAD TERMINALS, 1921.

Location	No. of Tracks	Total Car Capacity	Width of Driveway	Kind of Driveway
Alton and Southern Railroad:				
East St. Louis—Bentley and Bond Avenue.....	1	5	...	Unpaved
East St. Louis—Bentley and Broadway.....	1	7	...	Unpaved
East St. Louis—Forty-second and State Streets.....	2	9	...	Unpaved
Bunkum Road.....	1	4	...	Unpaved
Total car capacity.....	—	25	—	
Baltimore & Ohio Railroad:				
East St. Louis—Freight Station.....	6	94	18	Paved
..	..	54	18	Unpaved
Total car capacity.....	—	148	—	
Chicago & Alton Railroad:				
East St. Louis—Freight Station.....	4	30	25	Paved
..	1	13	40	Paved
Total car capacity.....	—	43	—	
Chicago, Burlington & Quincy Railroad:				
East St. Louis—Freight Station.....	4	62	25	Paved
St. Louis—Second and Franklin.....	8	97	20	Paved
St. Louis—Mullanphy to Tyler.....	21	291	20	Paved
Total car capacity.....	—	450	—	
Cleveland, Cincinnati, Chicago & St. Louis Railway:				
East St. Louis—Freight Station.....	6	118	30	Paved
East St. Louis—Relay Depot.....	1	8	35	Unpaved
Total car capacity.....	—	126	—	

TEAM TRACKS

Location	No. of Tracks	Total Car Capacity	Width of Driveway	Kind of Driveway
Chicago, Peoria & St. Louis Railroad:				
East St. Louis—Freight Station.....	3	51	35	Unpaved
Chicago, Rock Island & Pacific Railway:				
Brooklyn Street and Broadway.....	8	102	25	Paved
Used also by St. L.-S. F. and C. & E. I.				
East St. Louis & Suburban Railroad:				
East St. Louis—Twenty-first and State.....	3	20	20	Unpaved
East St. Louis—Twenty-fourth Street.....	1	3	...	Unpaved
East St. Louis—Twenty-ninth Street.....	1	9	...	Unpaved
East St. Louis—Seventy-fifth Street.....	1	9	...	Unpaved
Total car capacity.....		41		
Illinois Central Railway:				
East St. Louis—Freight Station.....	7	140	25	Paved
Illinois Traction System:				
St. Louis—Freight Station.....	1	4	...	Paved
St. Louis—Ninth and Salisbury.....	4	6	5	Unpaved
St. Louis—Second and Salisbury.....	2	30	15	Unpaved
Venice—Broadway and Main.....	1	2	...	Unpaved
Madison—Broadway and Market.....	3	7	15	Unpaved
Granite City—Seventeenth and Madison.....	1	10	15	Unpaved
Granite City—Twentieth and A Streets.....	1	50	15	Unpaved
Total car capacity.....		109		
Louisville & Nashville Railroad:				
East St. Louis—Freight Station.....	3	65	27	Paved
East St. Louis—John Street.....	1	3	...	Unpaved
East St. Louis—Missouri Avenue.....	1	13	40	Unpaved
East St. Louis—Third Street.....	1	15	60	Unpaved
St. Louis—Freight Station.....	2	30	22	Paved
Total car capacity.....		126		
Manufacturers' Railway:				
St. Louis—Second and LaSalle Streets.....	1	5	12	Unpaved
St. Louis—Second and Convent Streets.....	1	7	12	Unpaved
St. Louis—Merchant Street.....	1	6	30	Unpaved
St. Louis—Second and Rutger Streets.....	3	21	12	Unpaved
St. Louis—Broadway and Miller Street.....	5	48	45	Paved
St. Louis—Second and Barry Streets.....	1	3	12	Unpaved
St. Louis—Second and Trudeau Streets.....	2	9	12	Unpaved
St. Louis—Second and Utah Streets.....	1	7	12	Unpaved
St. Louis—Second and Zepp Streets.....	1	4	28	Unpaved
St. Louis—Ninth and Dorcas Streets.....	9	44	20	Paved
St. Louis—Eleventh and Lynch Streets.....	2	8	15	Paved
St. Louis—Second and Barton Streets.....	2	9	20	Unpaved
St. Louis—Second and Louisa Streets.....	1	3	12	Unpaved
St. Louis—Second and Dorcas Streets.....	4	37	25	Paved
St. Louis—Broadway and Pestalozzi Street.....	7	45	20	Paved
St. Louis—Second and Arsenal Streets.....	9	109	15	Paved
Total car capacity.....		365		
Missouri, Kansas & Texas Railway:				
St. Louis—Freight Station.....	2	28	20	Paved
	1	14	43	Paved
Total car capacity.....		42		
Missouri Pacific Railway:				
St. Louis—Seventh Street Freight Station.....	6	75	30	Paved
St. Louis—Gratiot—Fourteenth to Fifteenth Street..	4	30	20	Paved
St. Louis—Gratiot—Twenty-third Street.....	4	30	30	Paved
St. Louis—Gratiot—Spring Avenue.....	2	20	24	Unpaved
St. Louis—Manchester and Macklind Avenues.....	1	100	18	Paved
Maplewood—Sutton and Water Avenues.....	2	18	25	Unpaved
St. Louis—Biddle Street Freight Station.....	6	38	20	Paved

Location	No. of Tracks	Total Car Capacity	Width of Driveway	Kind of Driveway
St. Louis—Gratiot Street Freight Station.....	14	130	35	Paved
St. Louis—Kosciusko and Miller Streets.....	6	92	30	Unpaved
St. Louis—Kosciusko and Victor Streets.....	5	38	30	Unpaved
St. Louis—Broadway and Robert Street.....	3	18	...	Unpaved
St. Louis—Broadway Station—Tesson Street.....	1	6	25	Unpaved
Total car capacity.....		595		
Mobile & Ohio Railroad:				
East St. Louis—Freight Station.....	2	44	30	Unpaved
Pennsylvania Railroad:				
East St. Louis—Freight Station.....	10	143	30	Paved
St. Louis—Freight Station.....	3	50	35	Paved
Total car capacity.....		193		
St. Louis-San Francisco Railway:				
St. Louis—Seventh Street Freight Station.....	5	40	27	Paved
St. Louis—Gratiot Street.....	1	15	...	Unpaved
St. Louis—Knox Avenue.....	1	17	25	Unpaved
St. Louis—Kingshighway	1	3	30	Unpaved
St. Louis—Macklind Avenue.....	1	20	30	Unpaved
St. Louis—Tower Grove.....	2	15	30	Paved
St. Louis—Spring Avenue.....	2	21	25	Paved
St. Louis—Broadway Freight Station.....	3	23	20	Paved
Total car capacity.....		154		
St. Louis Southwestern Railway:				
St. Louis—Freight Station.....	7	54	30	Paved
St. Louis Troy & Eastern Railroad:				
East St. Louis—St. Clair Avenue.....	1	14	...	Unpaved
Southern Railway:				
East St. Louis—Broadway Freight Station.....	1	6	30	Paved
East St. Louis—Sixth Street Freight Station.....	3	42	32	Unpaved
East St. Louis—Piggott Avenue.....	1	12	15	Unpaved
East St. Louis—Fifteenth Street.....	1	4	15	Unpaved
East St. Louis—Illinois Avenue.....	1	7	15	Unpaved
East St. Louis—St. Clair Avenue.....	1	13	15	Unpaved
East St. Louis—State Street.....	1	12	15	Unpaved
Brooklyn—Second Street.....	1	2	15	Unpaved
Total car capacity.....		98		
Terminal Railroad Association:				
St. Louis—Bremen Avenue.....	4	32	25	Unpaved
St. Louis—Branch Street.....	8	98	25	Paved
St. Louis—North Market Street.....	11	102	20	Paved
St. Louis—Tyler and Brooklyn Streets.....	18	328	25	Paved
St. Louis—Florida Street.....	6	42	25	Paved
St. Louis—O'Fallon Street.....	5	40	20	Paved
St. Louis—Biddle Street.....	10	41	25	Paved
St. Louis—Carr Street.....	7	39	25	Paved
St. Louis—Chouteau Avenue (Wiggins).....	4	30	15	Unpaved
St. Louis—Miller Street (Wiggins).....	1	25	15	Paved
St. Louis—Lesperance Street (Wiggins).....	2	58	15	Unpaved
St. Louis—Barton Street (Wiggins).....	4	47	15	Unpaved
St. Louis—Victor Street (Wiggins).....	1	13	15	Unpaved
St. Louis—Dorcas Street (Wiggins).....	4	36	20	Paved
St. Louis—Eighth and Gratiot Streets.....	14	211	25	Paved
St. Louis—Tenth Street.....	2	36	25	Paved
St. Louis—Sixteenth Street.....	16	164	25	Paved
St. Louis—Twenty-second Street.....	5	22	20	Unpaved
St. Louis—Ladue Road (Belt).....	1	11	...	Unpaved
St. Louis—Spring Avenue (Belt).....	2	10	...	Unpaved
St. Louis—Easton Avenue (Belt).....	5	49	25	Unpaved
St. Louis—Union Avenue (Belt).....	3	56	25	Paved
St. Louis—Florissant Avenue (Belt).....	4	37	25	Unpaved
St. Louis—Antelope Street (Belt).....	3	12	40	Unpaved

TEAM TRACKS

Location	No. of Tracks	Total Car Capacity	Width of Driveway	Kind of Driveway
St. Louis—North Grand Avenue (Belt).....	3	19	20	Paved
Granite City—Nineteenth Street.....	1	15	...	Unpaved
Granite City—Niedringhaus Avenue.....	1	12	...	Unpaved
Madison—Third to Seventh Streets.....	1	10	30	Paved
East St. Louis—State Street (Belt).....	1	15	25	Paved
East St. Louis—Relay Depot.....	7	49	25	Unpaved
Prairie Du Pont (Wiggins).....	1	3	...	Unpaved
Total car capacity.....		1,662		
Toledo, St. Louis & Western Railroad:				
East St. Louis—Freight Station.....	2	50	20	Paved
Wabash Railway:				
St. Louis—North Market Street.....	5	140	30	Paved
St. Louis—Franklin to Carr Street.....	5	81	20	Paved
East St. Louis—Freight Station.....	4	115	28	Paved
Total car capacity.....		336		

SUMMARY.

St. Louis.....	1,558 car lengths on Terminal Railroad Association
St. Louis.....	2,041 car lengths on other railroads
East St. Louis and East Side.....	104 car lengths on Terminal Railroad Association
East St. Louis and East Side.....	1,265 car lengths on other railroads
Grand total.....	4,968

As a matter of fact team track facilities are excessive in some instances as the team tracks of the C. B. & Q. at Mound street. Team track facilities and service are inadequate in other instances (particularly the St. Louis team tracks of the Terminal Railroad Association), by reason of:

1. Team track facilities of individual railroads not being available to the business of other railroads;
2. Team track facilities of individual railroads and of the Terminal Railroad Association not being distributed throughout the City in the same proportions as the business;
3. Sudden and temporary increase in the business of a shipper by reason of buying or selling at one time an unusually large number of carloads, and slow unloading of cars;
4. Delay in the Terminal Railroad Association's handling of cars between individual railroads and team tracks;
5. Driveways too narrow, unpaved or poorly paved, and difficult of access.

The first deficiency can be corrected by the construction of additional team tracks for the business of all railroads. The present team tracks of the Terminal Railroad Association, the Alton & Southern Railroad and the Manufacturers' Railway are open to the business of all railroads, which is not the case with team tracks of other railroads.

The situation can be adequately met, how-

ever, by the Terminal Railroad Association building team tracks at points where needed on other lines or by acquiring present team tracks of other lines for that purpose where they are adequate for the business of the owning railroad and the additional business of the Terminal Railroad Association.

The Terminal Railroad Association's team tracks are heavily used, not only by the traffic of east side lines, many of which have no team tracks of their own in St. Louis, but also to a considerable extent, by the traffic of west side lines, which have their own team tracks in St. Louis.

On the east side the Alton & Southern and the Terminal Railroad Association lines are well distributed and team tracks may be built on their lines as needed from time to time. The same is true along the Terminal Railroad Association lines on the St. Louis river front from Arsenal street to the M. K. & T. Yard and around the Outer Belt to Page avenue, but the Terminal Railroad Association has no lines south of Arsenal street, nor west of Grand avenue.

It appears that the first inadequacy can be improved by the Terminal Railroad Association building team tracks along the following lines:

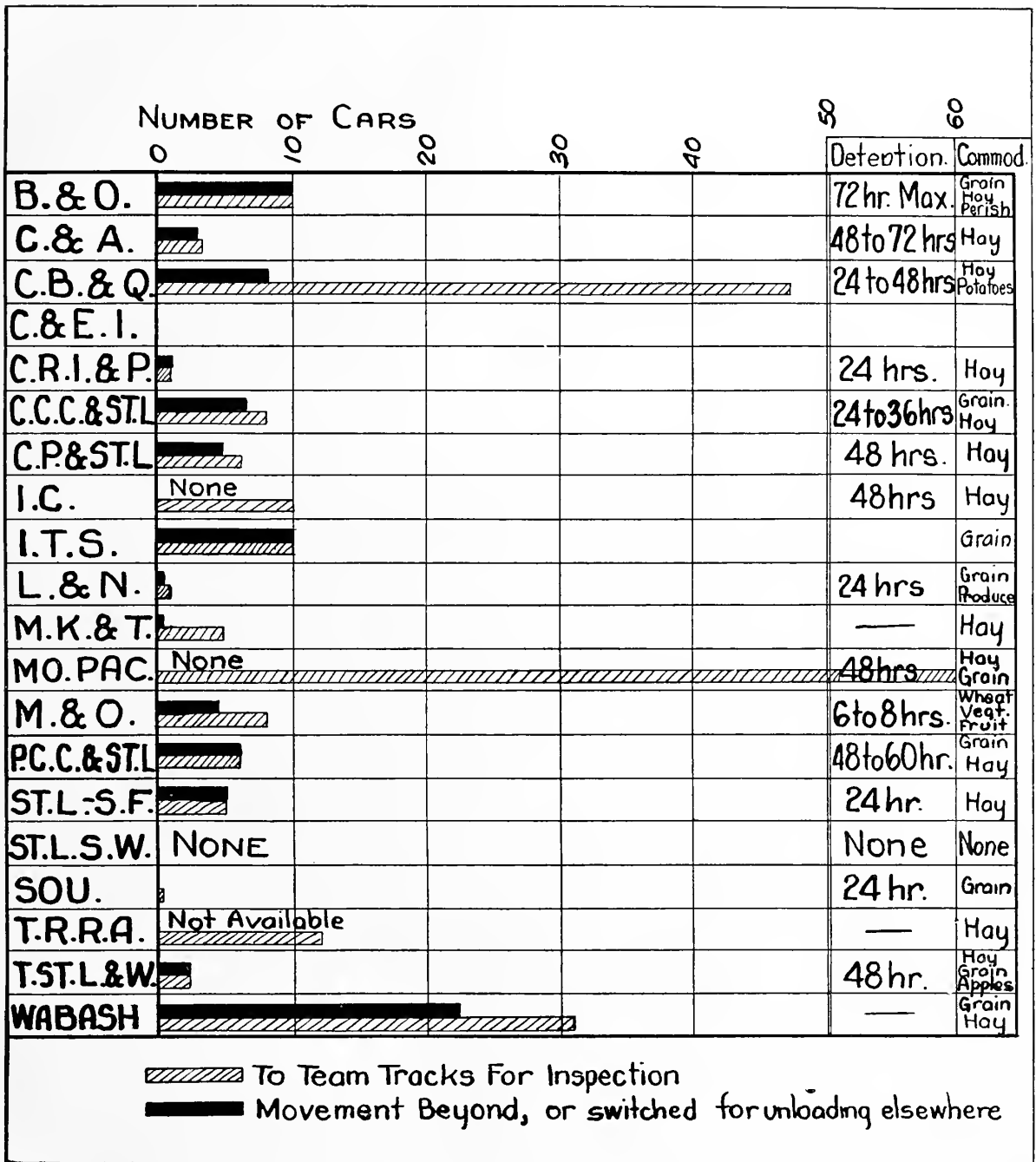


Fig. 74—Number of Cars to Team Tracks for Inspection and Unloading.

Wabash Railroad between Grand avenue and Forest Park;

Missouri Pacific Railroad and St. L.-S. F. Railway between Grand avenue and Maplewood;

Missouri Pacific Railroad along Oak Hill Branch and South St. Louis river front.

Those off-line "universal" team tracks could be switched by the Terminal Railroad Association under trackage right if the volume of business warranted, or by the road on which located for a switching charge.

The second inadequacy (improper distribu-

tion of team tracks) can be corrected by the railroads adding to their team track facilities where their shippers will be served best. To determine how to accomplish this, each railroad should study its records of a year of the points of origin and destination and the kind of team track freight handled within the district as a whole.

A study extending over a shorter period than a year will not reflect the seasonal variations of shipments in various parts of the City which affect scattered team tracks, some of which are used by only a few shippers, more than they affect l. c. l. freight stations which are used by many shippers. Coal traffic in winter and fruit and vegetable traffic in summer may be cited as instances of seasonal traffic.

There are points in the City, however, where it is readily apparent that the team tracks of the Terminal Railroad Association are insufficient, especially along the Mill Creek Valley from Seventh street to Grand avenue, as at Sixteenth street and Clark avenue, at Compton avenue contiguous to the automobile market, and also along the river front, between Tyler street and Chouteau avenue. The Committee's plan for the enlargement of facilities in the Mill Creek Valley provides for additional team tracks between Twelfth and Eighteenth streets, and team tracks and automobile unloading platforms on Market street between Compton avenue and Grand avenue.

Additional team tracks should be built by the Terminal Railroad Association along the river front north of the Eads Bridge and south of the Municipal Bridge, where the City of St. Louis could lease sufficient of the river front for this purpose.

Between those bridges there is not enough city property for team tracks, but the Terminal Railroad Association owns considerable property west of the elevated railroad on which team tracks might be built.

Such team tracks need not interfere with the intensive development of that property, as it is entirely possible to construct buildings there later on with team tracks in the lower floor. Whatever objection there might

be to switching team tracks from the elevated tracks on account of the numerous passenger trains will be greatly reduced if east side passenger trains are transferred to the Municipal Bridge. A third track might be built as a switching lead.

The third inadequacy (sudden increase in business and slow unloading of cars) is due to a shipper buying a large part or all of the year's supply of goods at one time on account of favorable prices, and the goods coming along faster than his facilities or the team tracks can handle them, and to the practice of coal dealers peddling coal from team tracks as orders are received necessitating cars being placed on hold tracks and in some cases refused and embargoed after the first are delayed.

This can only be corrected by the shipper himself, either by spreading his shipments or by arranging to handle the cars as fast as they are placed. While the railroads should provide sufficient team tracks to handle the maximum number of cars under ordinary conditions, they cannot be expected to provide sufficient team tracks in every location to meet all emergencies.

Coal, which represents a large proportion of the tonnage handled on team tracks, is handled as wanted by hand shovels directly from cars to wagons, a slow and expensive process that delays cars and occupies team tracks unnecessarily long. This use of team tracks should be denied when there is other use for them.

Coal dealers should be compelled to provide facilities for promptly unloading coal on its arrival.

The fourth inadequacy (delay in handling cars) is directly due to the present system of interchange of the individual railroads and the Terminal Railroad Association, which results in an average delay of four days in the normal handling of a car from its arrival in the district to its setting on a team track.

In order to hold their cars and have them released promptly for further loading, in order to save the charge of the Terminal Railroad Association for handling the cars across

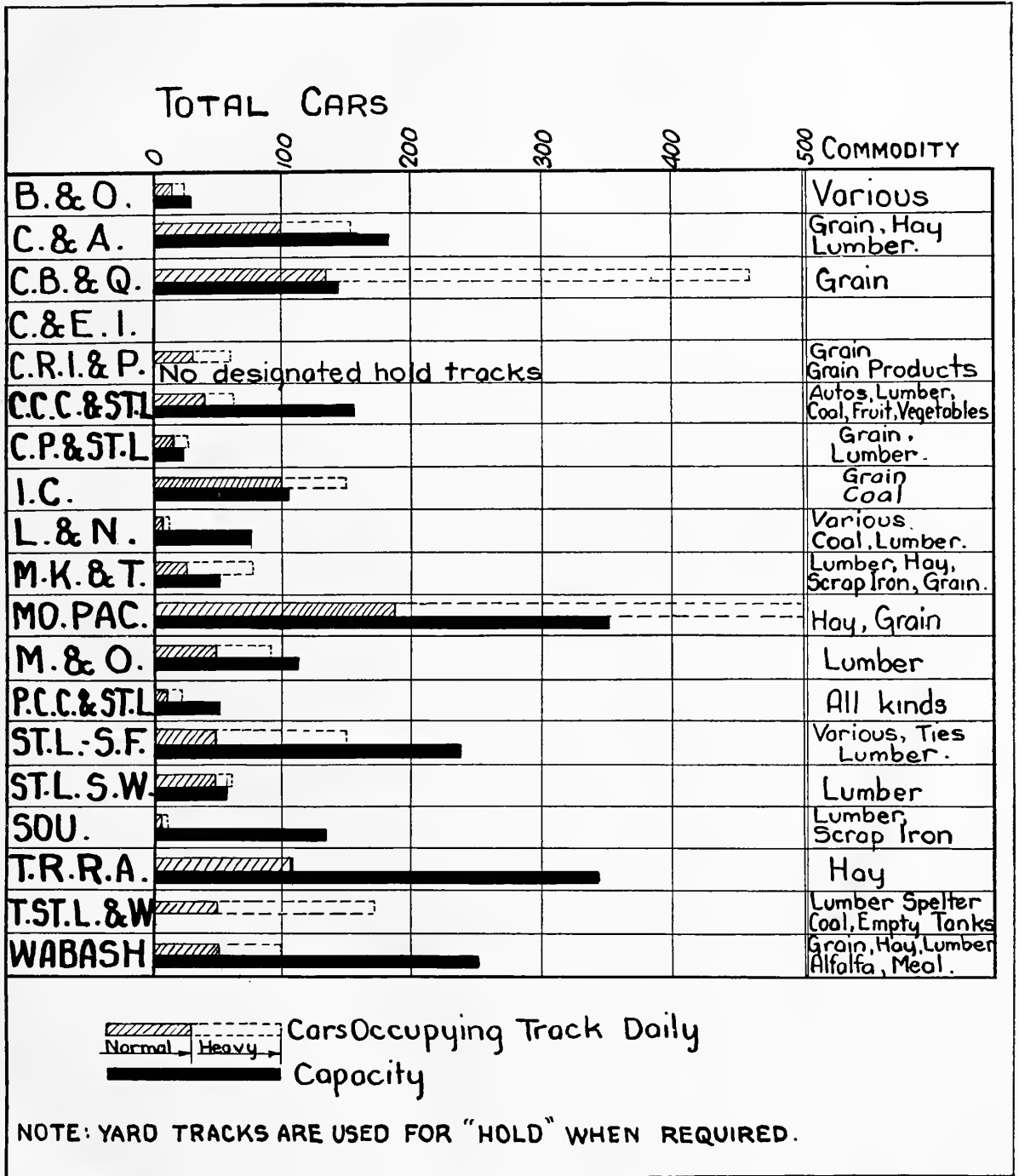


Fig. 75—Capacity and Use of Hold Tracks.

the river and to save time for the consignee, representatives of East Side railroads frequently call up St. Louis consignees, advise of the arrival of a shipment, and offer either to set it on a team track on the east side or

to turn it over to the Terminal Railroad Association.

When the consignee is in a hurry for his shipment he often decides to have the car set on the team track of the eastern road that

brought it in and he hauls the goods across the river.

This practice has aggrieved many shippers; while they were given their choice they realize they have chosen the lesser of two evils, and they feel that the greater evil of delay for delivery in St. Louis should not exist; they want it corrected.

This condition can be materially improved by the change in the methods of handling car-load business recommended in this report and by the proper location and capacity of team tracks.

It should not be necessary to comment on the fifth inadequacy. Driveways should be made wide enough and well paved. They should be readily accessible to and from public streets.

The Committee recommends that in addi-

tion to locations suggested above for additional team tracks, an intensive study be made of business handled over team tracks for a year of heavy business, such as November, 1919, to October, 1920, inclusive, noting particularly the origin and destination of team track freight within the St. Louis-East St. Louis District, that the proper location and capacity of team tracks be determined from that study, and that thereafter the necessary team tracks be built as quickly as practicable in the proper locations.

Needless to say, a prime consideration in the location of team tracks in future should be the keeping out of the congested districts business that can be handled outside. Team track business readily lends itself to proper distribution from the standpoint of the railroad, the public and the shipper.

L. C. L. FREIGHT

It is frequently contended that the cost of handling freight in the terminals of large cities equals the cost of many miles of road haul of the same freight. It is consequently necessary to reduce to a minimum the time and the cost of the handling of freight, including less than carload merchandise, through the terminals.

Less than carload freight is divided into two general classes as it affects the terminal situation:

(a) Local l. c. l. freight is that freight which originates in or is destined to the local terminal.

(b) Connecting line l. c. l. freight is that which comes into a terminal over one road and departs over another for destination beyond the terminal.

The methods of handling l. c. l. freight may be grouped in general as follows:

(a) Individual freight stations on the tracks of the carrier which performs the road haul to and from which freight is delivered by drays or under special circumstances by trap cars. Only freight for, or that handled by, the railroad operating a freight house, may be handled through it.

(b) Universal on-track freight stations which may be so located that they have to be served largely by trap cars, or so located to be served direct by the individual road haul companies. Through these houses freight to or from any of the railroads entering a terminal may be delivered.

(c) Universal off-track freight stations through which freight to or from any railroad entering the terminal may be delivered.

(d) Various combinations of "a," "b" and "c."

In the St. Louis-East St. Louis District less than carload freight is handled by twenty railroads in twenty-five l. c. l. railroad freight stations, some of which are located in St. Louis and others in East St. Louis. All the west side lines and four east side lines have

freight stations only in St. Louis. Four east side lines have freight stations in both cities. Nine east side lines have no freight stations in St. Louis. They handle l. c. l. freight in stations at the ends of their lines on the East St. Louis river front and in off-track stations in St. Louis. This latter is true of the four east side lines having freight houses on both sides of the river.

The east side lines that have freight stations in East St. Louis absorb a portion of the charges of transfer companies for draying St. Louis freight across the river, and for handling through the off-track freight stations of transfer companies, should the shipper elect to use them. Such stations are really the St. Louis freight stations of the east side lines.

The Manufacturers Railway, the Alton & Southern, the East St. Louis Junction, the Wiggins Ferry Company, the St. Louis Merchants Bridge Terminal Railway, the Litchfield & Madison Railway, the St. Louis, Troy & Eastern Railroad, the St. Louis and O'Fallon Railway, and the St. Louis and Ohio River Railroad do not have any l. c. l. freight stations.

The individual on-track freight stations of the various companies are listed below:

The Missouri Pacific has three l. c. l. freight stations in St. Louis, two on its own tracks and one which is reached over the tracks of the Merchants Bridge Terminal.

The Wabash and the Chicago, Burlington & Quincy have l. c. l. freight stations reached by their own tracks in St. Louis and in East St. Louis.

The St. Louis-San Francisco Railway, the Missouri, Kansas & Texas Railway, the Chicago & Eastern Illinois, the Chicago, Rock Island & Pacific and the St. Louis Southwestern Railway reach their local freight stations in St. Louis over the tracks of the Merchants

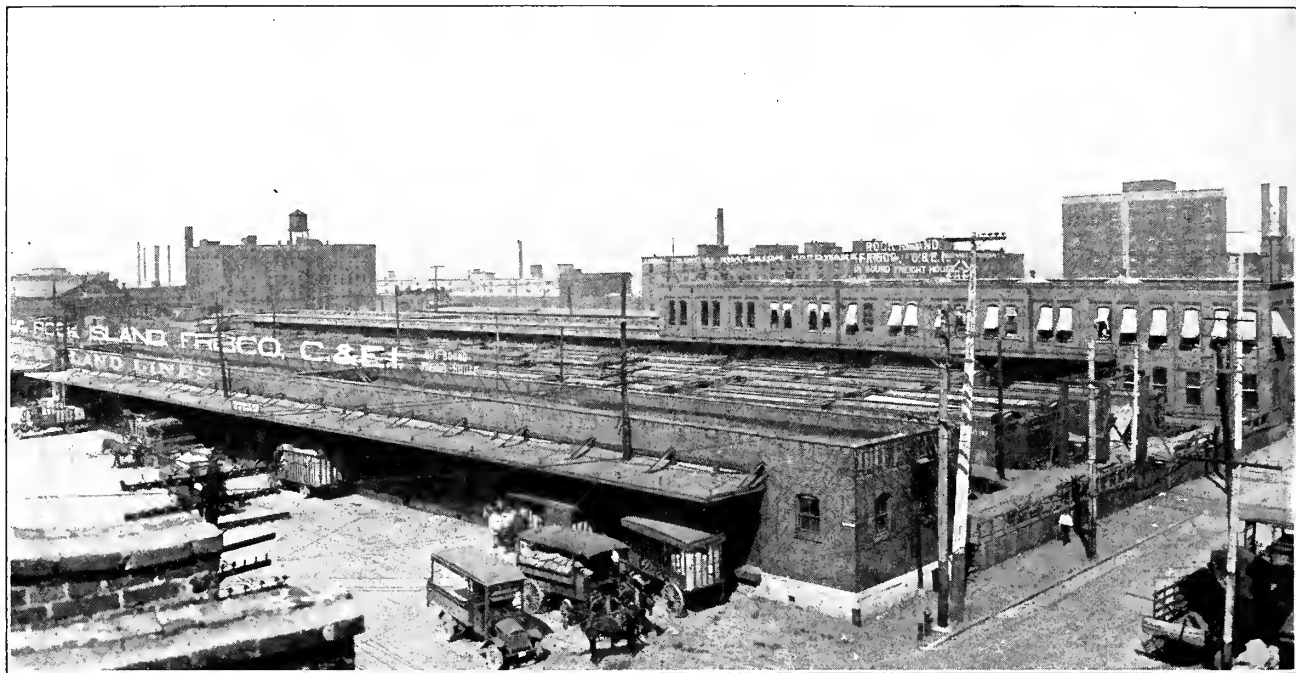


Fig. 76—Joint C. R. I. & P., C. & E. I. and St. L.-S. F. Freight Station, North St. Louis.



Fig. 77—C. B. & Q. Freight Station, North St. Louis.

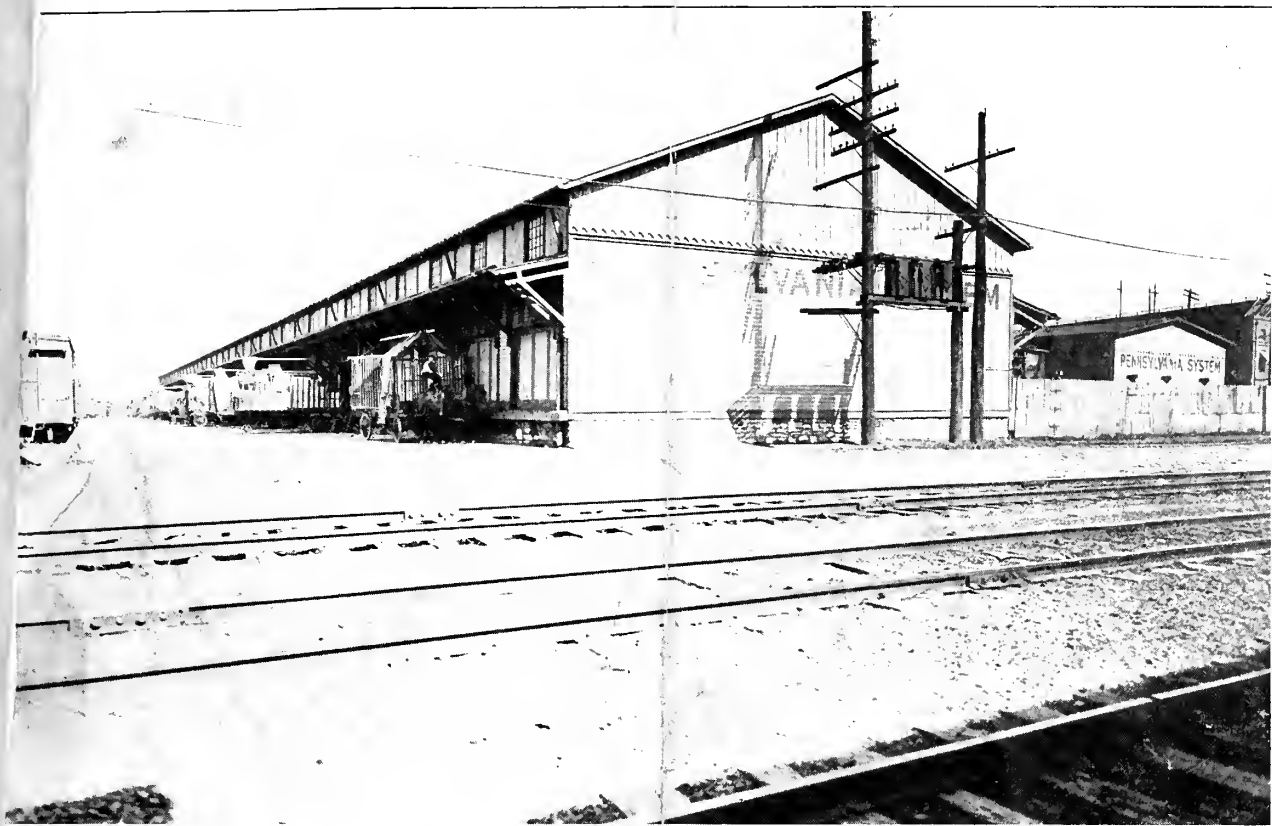


Fig. 78—Penn. Freight Station, East St. Louis.

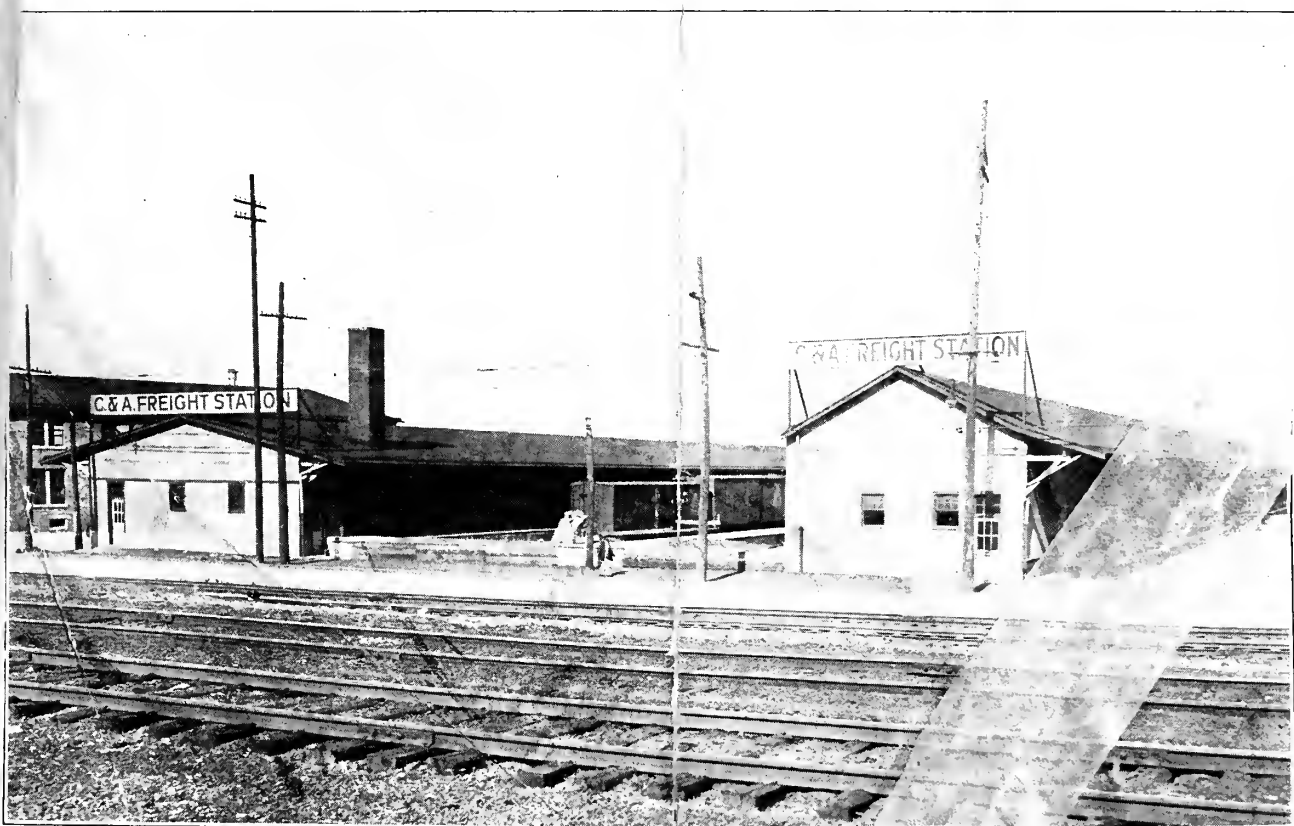


Fig. 79—C. & A. Freight Station, East St. Louis.

Bridge Terminal, and in the case of the Seventh Street Station of the St. Louis-San Francisco, over the tracks of the Terminal Railroad Association.

The Illinois Traction System has a l. c. l. freight station reached by its own tracks in St. Louis.

The Pennsylvania and the Louisville & Nashville have l. c. l. freight houses in both East St. Louis and St. Louis, the east side houses are reached by their own tracks and the west side houses over the tracks of the Merchants Bridge Terminal.

The Baltimore & Ohio, the Chicago & Alton, the Cleveland, Cincinnati, Chicago & St. Louis, the Chicago, Peoria & St. Louis, the East St. Louis & Suburban, the Illinois Central, the Mobile & Ohio, the Southern and the Toledo, St. Louis & Western have no freight stations in St. Louis, but have freight stations in East St. Louis reached by their own tracks.

The Terminal Railroad Association has a universal l. c. l. freight station in St. Louis, and the Cupples Company, which owns a group of industrial and commercial buildings,

CGW
KCS
UP
CHS
ATSF

TABLE XX—STATEMENT SHOWING RAILROAD FREIGHT HOUSES IN ST. LOUIS AND EAST ST. LOUIS

West Side Railroads Having Houses Only in St. Louis.

Chicago, Rock Island & Pacific, 0
Missouri, Kansas & Texas, +
St. Louis-San Francisco, *

West Side Railroads Having Houses Only in East St. Louis.

None.

Railroads Having Lines on Both Sides of River and Freight Houses Only in St. Louis.

Missouri Pacific, +

Railroads With Lines and Freight Houses on Both Sides of River.

Chicago, Burlington & Quincy, 0
Wabash, 0

Terminal Companies Having Freight Houses in St. Louis.

Cupples Company,
Terminal Railroad Association of St. Louis.

East Side Railroads Having Houses Only in East St. Louis.

Baltimore & Ohio, --

Chicago & Alton, 0

Chicago, Peoria & St. Louis,
Cleveland, Cincinnati, Chicago & St. Louis.--
East St. Louis & Suburban,
Illinois Central, --
Mobile & Ohio,
Southern,
Toledo, St. Louis & Western.--

East Side Railroads Having Houses Only in St. Louis.

Chicago & Eastern Illinois, --

St. Louis-Southwestern,
Illinois Traction System.

East Side Railroads Having Houses on Both Sides of River.

Pennsylvania, --

Louisville & Nashville.

TABLE XXI—STATEMENT SHOWING TONS OF LOCAL AND CONNECTING LINE L. C. L. FREIGHT HANDLED BY EACH ROAD DURING WEEK OF OCTOBER 18TH TO 23RD, 1920.

Roads	Local Freight Inbound		Local Freight Outbound		Inbound		Connecting Line Freight Outbound		Total Freight	
	Tons	Per Cent of Total	Tons	Per Cent of Total	Tons	Per Cent of Total	Tons	Per Cent of Total	Tons	Per Cent of Total
B. & O.....	326	4.3	670	3.2	661	9.5	153	2.2	1,810	4.3
C. & A.....	511	6.8	520	2.5	282	4.0	141	2.0	1,454	3.5
C., B. & O.....	566	7.5	2,084	10.1	356	5.1	468	6.7	3,475	8.2
C. & E. I.....	267	3.5	295	1.4	124	1.8	103	1.5	789	1.9
C., C., C. & St. L.....	971	12.9	800	3.9	944	13.6	130	1.9	2,845	6.8
C. P. & St. L.....	113	1.5	80	0.4	69	1.0	63	0.9	326	0.8
C., R. I. & P.....	126	1.7	545	2.6	61	0.9	266	3.8	998	2.4
E. St. L. & Sub.....	60	0.8	281	1.4	.....	.....	.....	.....	341	0.8
I. C.....	443	5.9	1,957	9.5	277	4.0	224	3.2	2,901	6.9
I. T. S.....	148	2.0	675	3.3	8	0.1	1	.....	832	2.0
L. & N.....	202	2.7	946	4.6	293	4.2	125	1.8	1,566	3.7
M., K. & T.....	70	0.9	869	4.2	161	2.3	927	13.3	2,027	4.8
Mo. Pac.....	347	4.6	3,108	15.1	592	8.5	2,028	29.1	6,075	14.4
M. & O.....	169	2.2	842	4.1	131	1.9	118	1.7	1,260	2.9
Penn.....	366	4.9	877	4.3	981	14.2	170	2.4	2,394	5.8
St. L. & S. F.....	226	3.0	2,220	10.7	204	2.9	806	11.5	3,456	8.2
St. L. S. W.....	60	0.8	795	3.9	58	0.8	456	6.6	1,369	3.2
Southern.....	315	4.2	560	2.7	447	6.4	115	1.7	1,437	3.4
T., St. L. & W.....	254	3.4	171	0.8	302	4.3	26	0.4	753	1.8
Wabash.....	1,995	26.4	2,339	11.3	1,016	14.5	647	9.3	5,997	14.2
Total.....	7,535	100.0	20,634	100.0	6,967	100.0	6,967	100.0	42,103	100.0

has provided railroad tracks, platforms, elevators and other facilities for handling l. c. l. freight for its tenants and any others who choose to avail themselves of the facilities. This is recognized by the railroads as a universal freight station.

Off-track universal freight stations are provided as follows:

- One in East St. Louis by MacMahon Transfer Company,
- One in East St. Louis by Columbia Terminals Company,
- Eight in St. Louis by Columbia Terminals Company,
- Two in St. Louis by Fidelity Transfer Company,
- One in St. Louis by Central Transfer Company.

Study of Origin and Destination of L. C. L. Freight

The Committee made a study of all l. c. l. freight handled into, out of, and through the St. Louis-East St. Louis terminals during the week of October 18-23, 1920. This was done by copying from the dray tickets the name of every shipper, the weight of the shipment, and how the shipment was handled between the shipper and the freight house. More than 200,000 shipments were copied from the records in the railroad freight houses by clerks working under the direction of the Committee.

The terminal district was then divided into about 120 zones and the in and outbound freight of each railroad was allocated to the zone in which the shipper was located. The information is shown on a key map showing the outlines of the zones, a map showing the and a table showing the number of tons of freight passing through each freight house, both inbound and outbound, which accompany this report.

Another map and table were made showing the same information for the entire district divided into thirty-five larger zones, and still another map and table for only eight zones.

total number of tons in and out of each zone

This study showed the l. c. l. freight business during the week of October 18-23, 1920, distributed over the district about as follows:

Whole East Side, 1,757 tons—6.3 per cent.

St. Louis

River to Eighteenth street, Tyler street to Chouteau avenue, 14,659 tons—52.5 per cent.

Eighteenth street to Jefferson avenue, Salisbury street to Russell avenue, 4,736 tons—17 per cent.

Jefferson avenue to Grand avenue, Taylor avenue to Chippewa street, 2,720 tons—9.8 per cent.

Northwest Industrial District, 894 tons—3.2 per cent.

Central West Industrial District, 2,080 tons—7.5 per cent.

Remainder of North St. Louis, 461 tons—1.7 per cent.

Remainder of South St. Louis, 564 tons—2.0 per cent.

The most intensive areas were indicated as follows:

1. Washington avenue, including Lucas and St. Charles, Third to Eighteenth street.

2. Cupples Station group, Seventh to Twelfth streets, Spruce to Poplar streets.

3. Fourth street to Eighth street, north to Cass and south to Walnut street.

4. Third street to river from Washington avenue to Chouteau avenue.

5. Ninth street to Twelfth street, Locust street to Spruce street.

During that week the amount of l. c. l. freight handled at the railroad freight houses was as follows:

	Tons.
St. Louis freight houses—inbound.....	4,089
St. Louis freight houses—outbound.....	12,932
East St. Louis freight houses—inbound.....	3,446
East St. Louis freight houses—outbound.....	7,702

Total local l. c. l. freight.....	28,169
Connecting line l. c. l. freight—in.....	6,967
Connecting line l. c. l. freight—out.....	6,967

Total l. c. l. freight through all railroad freight houses one week..... 42,105

Average about 7,000 tons per day.

For comparative purposes it is interesting to note the volume of l. c. l. handled at Chicago, which is about as follows:

	Tons Per Day.
Inbound	13,000
Outbound	19,000

32,000

The study indicates that by far the major portion of l. c. l. freight originates in or is destined to the so-called downtown or central

TABLE XXII—AMOUNT AND DISTRIBUTION BY ZONES OF LOCAL, L. C. L. FREIGHT
HANDLED AT EACH FREIGHT HOUSE—WEEK OF OCT. 18-23, 1920.

AMOUNT AND DISTRIBUTION OF LOCAL L.C.L. FREIGHT
FOR ONE WEEK - OCT.18-23-1920 - IN TONS

NOTE: IN-FREIGHT BROUGHT IN BY RAILROADS
OUT-FREIGHT TAKEN OUT BY RAILROADS
FOR LOCATION OF ZONES SEE KEY-MAP

ST. LOUIS FREIGHT HOUSES

EAST ST. LOUIS FREIGHT HOUSES

[illegible]

PREPARED FOR ENGINEERS COMMITTEE INVESTIGATING
ST. LOUIS-EAST ST. LOUIS RAILROAD TERMINALS

C.E.SMITH & CO.
ST. LOUIS MO

CONSULTING ENGINEERS
1921

Note: In—Freight brought in by railroads.
Out—Freight taken out by railroads.
For location of zones, see Key-Map.

EAST ST. LOUIS FREIGHT HOUSES

AMOUNT AND DISTRIBUTION OF LOCAL L. C. L. FREIGHT FOR ONE WEEK, OCTOBER 18-23, 1920, IN TONS.

Note: In—Freight brought in by railroads.
 Out—Freight taken out by railroads.
 For location of zones, see Key-Map.

ST. LOUIS FREIGHT HOUSES EAST ST. LOUIS FREIGHT HOUSES

Note: In—Freight brought in by railroads.
Out—Freight taken out by railroads.
For location of zones, see Key-Map.

EAST ST. LOUIS FREIGHT HOUSES

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TABLE XXIV—STATEMENT SHOWING TONS OF LOCAL L. C. L. FREIGHT DISTRIBUTED AMONG VARIOUS ASSEMBLING AND DISTRIBUTING AGENCIES, WEEK OCTOBER 18-23, 1920.

Freight Houses	INBOUND					OUTBOUND					Total S. L. & West Side	Grand Total
	Col. Tr.	Other Drays	T.R.R.A. 10 St. Trap Cars	Drays and Trucks	Traps Cars	Col. Tr.	Other Drays	T.R.R.A. 10 St. Trap Cars	Drays and Trucks	Traps Cars		
East St. Louis—												
B. & O.	137	134	48	.....	6	326	238	24	.....	50	924	996
C. & A.	174	165	122	.....	30	511	175	5	.....	73	898	1031
C. B. & O.-E.	1	13	1	.....	1	16	62	.....	.....	.....	2	78
C. C. & St. L.	444	259	228	.....	35	971	233	103	.....	27	1607	1771
C. P. & St. L.	35	38	31	.....	1	113	34	8	.....	9	166	193
I. C.	169	198	45	.....	31	443	938	70	.....	105	2154	2400
L. & N.	25	37	.....	.....	.....	65	403	7	.....	56	703	787
M. & O.	82	72	13	.....	2	169	432	27	.....	47	877	1011
Pennsylvania	56	79	10	.....	13	158	196	.....	.....	56	792	883
Southern	188	68	32	.....	17	315	186	22	.....	23	802	825
T. St. L. & W.	108	104	24	.....	13	254	164	7	.....	24	381	425
Wabash (East)	.....	45	.....	.....	.....	124	164	.....	.....	.....	283	357
E. St. L. & Sub.	.....	60	.....	.....	.....	60	281	.....	.....	.....	58	341
Totals.....	1419	1272	554	.....	148	3446	2945	273	.....	495	9887	11,148
Percentages.....	41.2	36.9	16.1	.....	4.3	100	38.3	3.5	.....	6.4	11.3	100
St. Louis—												
C. & E. I.	15	228	3	21	.....	267	180	.....	.....	14	295	562
C. B. & O.-W.	20	463	.....	15	.....	550	1411	.....	.....	186	2022	2572
C. R. I. & P.	2	121	.....	.....	3	126	422	.....	.....	58	545	671
L. T. S.	2	146	.....	.....	.....	148	649	.....	.....	.....	675	823
L. & N.	13	124	.....	.....	.....	137	224	.....	.....	.....	224	361
M. K. & T.	17	53	.....	.....	.....	70	642	.....	.....	57	869	939
Mo. Pac. (7th St.)	.....	132	.....	.....	.....	137	188	.....	.....	112	45	870
Mo. Pac. (Gratiot)	.....	187	.....	.....	.....	210	659	.....	.....	194	1241	1451
Mo. Pac. (Biddle)	18	.....	.....	.....	.....	.....	1089	.....	.....	.....	1089	1089
Pennsylvania	7	201	.....	.....	.....	208	152	.....	.....	.....	152	360
St. L.-S. F. (7th St.)	5	195	.....	.....	5	226	709	.....	.....	196	1305	1531
St. L.-S. F. (Broadway)	.....	.....	.....	.....	.....	.....	915	.....	.....	.....	44	1487
St. L. S. W.	.....	59	.....	.....	.....	60	485	.....	.....	68	915	915
Wabash (West)	143	1674	53	1	49	1950	1587	.....	.....	43	27	828
North Market Dock	.....	.....	.....	.....	.....	.....	72	.....	.....	160	2027	3977
Totals.....	242	3583	56	37	67	4089	9670	.....	.....	1045	13,018	17,107
Percentages.....	5.9	87.6	1.4	0.9	1.7	100	74.3	.....	.....	8.0	97.5	100
Grand Total.....	1661	4855	610	37	215	7535	12,615	273	.....	1540	26,561	28,255
Percentages.....	22.0	64.4	8.1	0.5	2.9	100	60.9	1.3	.....	7.4	94.0	100

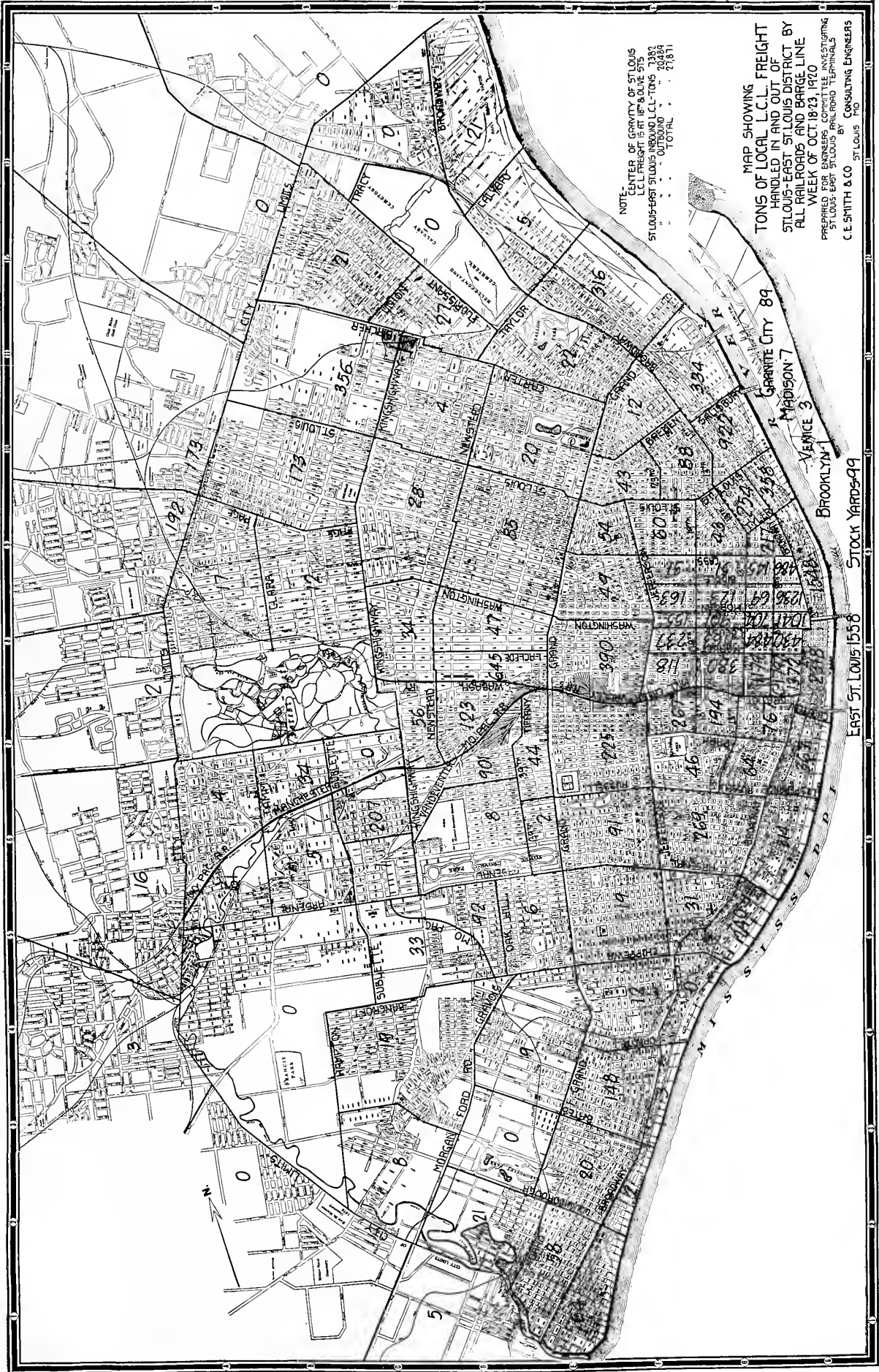


Fig. 82—Distribution by Zones of Local L. C. L. Freight Week of October 18-23, 1920.



Fig. 83—Distribution of Local L. C. L. Freight in 35 Zones Week of October 18-23, 1920.

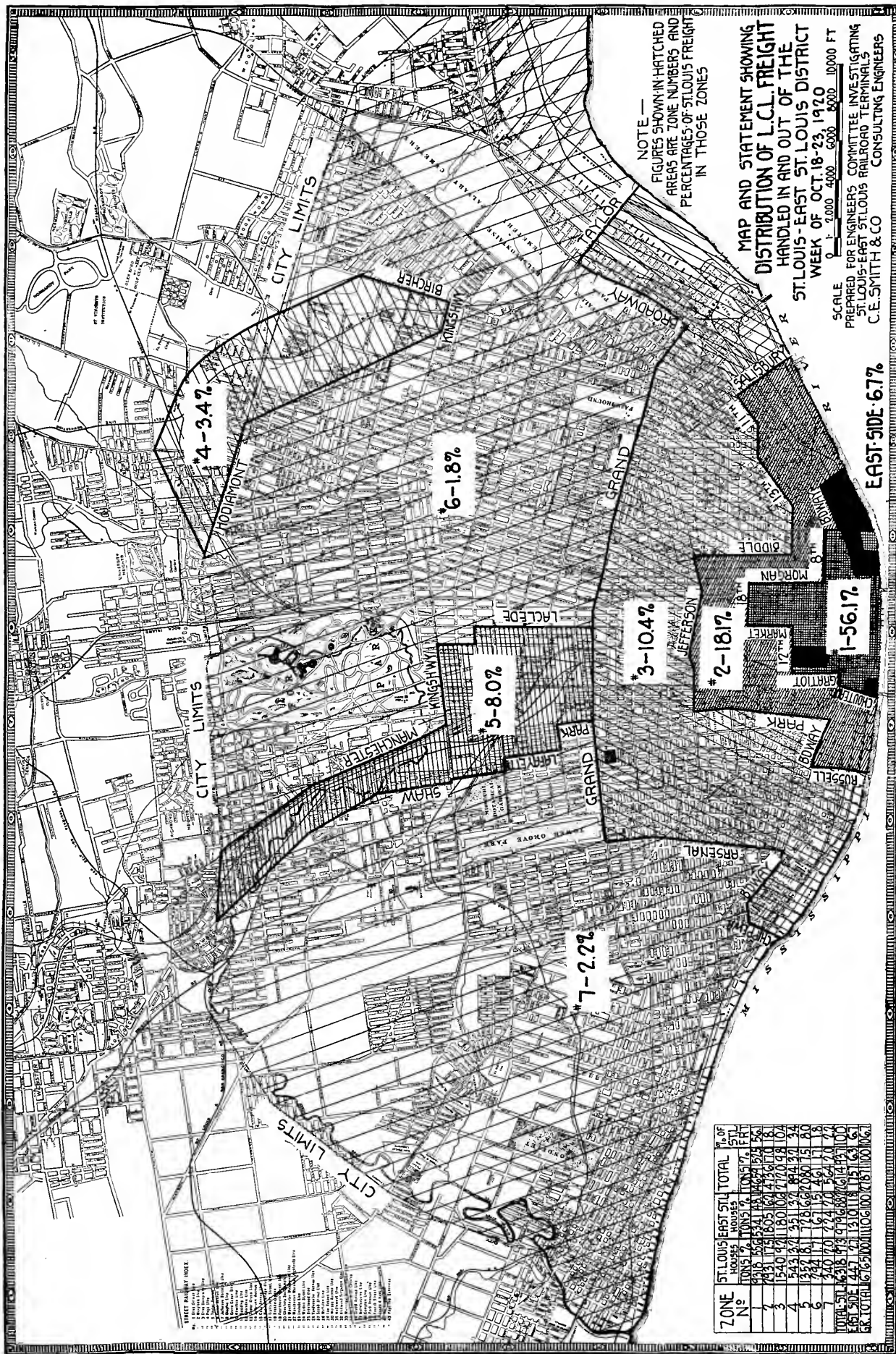


Fig. 84—Distribution of Local L. C. L. Freight in Eight Zones—Week of October 18-23, 1920.

TABLE XXV—TABLE SHOWING AMOUNT OF L. C. L. FREIGHT HANDLED ACROSS MISSISSIPPI RIVER WEEK OF OCTOBER 18-23, 1920.

Between Freight Houses—	By Dray	By Car	Total
West Side to East Side.....	761	271	1,032
East Side to West Side.....	3,518	1,090	4,608
Between Shipper and Freight Houses—			
West Side to East Side.....	8,225	1,662	9,887
East Side to West Side.....	433	.....	433
Total	12,937	3,023	15,960
Average tons per day.....	2,156	504	2,660
	81.1%	18.9%	100%

TABLE XXVI—STATEMENT SHOWING AMOUNT AND INTENSITY OF L. C. L. FREIGHT HANDLED IN VARIOUS PARTS OF ST. LOUIS, WEEK OCTOBER 18-23, 1920

Central Business District.			Outside of Central District.		
Location.	Tons in One Week.	Tons Per Acre Per Week.	Location.	Tons in One Week.	Tons Per Acre Per Week.
Third, Eighth, Lucas, St. Charles	1,041	28.9	Broadway, Twelfth, Gratiot, Park	767	4.9
Ninth, Twelfth, Lucas, St. Charles	704	25.0	Eleventh, River, St. Louis, Salisbury	922	3.7
Third, Eighth, Morgan, Carr.....	1,236	23.8	Broadway, River, Tyler, St. Louis	358	3.2
Thirteenth, Eighteenth, Lucas, St. Charles	901	19.5	Twelfth, Broadway, Cass, Ty- ler	217	2.7
Fourth, Eighth, Walnut, Pop- lar	1,372	17.5	Grand, Newstead, North Side Wabash Railway	645	2.7
Third, River, Washington, Chouteau	2,318	14.8	Grand, Kingshighway, South Side Missouri Pacific Rail- way tracks	901	2.6
Ninth, Twelfth, Walnut, Pop- lar	1,179	14.7	Nineteenth, Jefferson, Park, Missouri Pacific Railway.....	267	2.3
Thirteenth, Eighteenth, Lo- cust, Market	1,163	14.5	Broadway, Thirteenth, Tyler, St. Louis	254	2.3
Broadway, Eighth, Biddle, Cass	486	11.1	Northwest St. Louis District.	878	*
Ninth, Twelfth, Locust, Market	484	11.0			
Third, River, Lucas, Tyler.....	1,548	9.9			
Sixth, Eighth, Locust, Market	430	9.2			

*Tons per acre not given for northwest dis-
trict account scattered area.

business district, and that comparatively little either originates in or is destined to the outlying industrial district. It also indicates that while the off-track freight houses could be distributed throughout the business district to better advantage than at present, most of them are fairly well located, but some of them are too small.

Intensity of Use L. C. L. Freight Stations

The performance of the l. c. l. freight houses at St. Louis and East St. Louis as indicated by the business transacted through them for the

week of October 18-23, 1920, on the basis of tons handled per square foot of freight house area per year, was as follows:

East St. Louis houses:

Inbound, 1.27 to 3.08—Average 1.73 tons per square foot per year,
Outbound, 1.50 to 5.63—Average 2.85 tons per square foot per year,
Two way, 1.81 to 2.34—Average 1.88 tons per square foot per year.

St. Louis houses:

Inbound, 0.41 to 1.62—Average 1.22 tons per square foot per year,

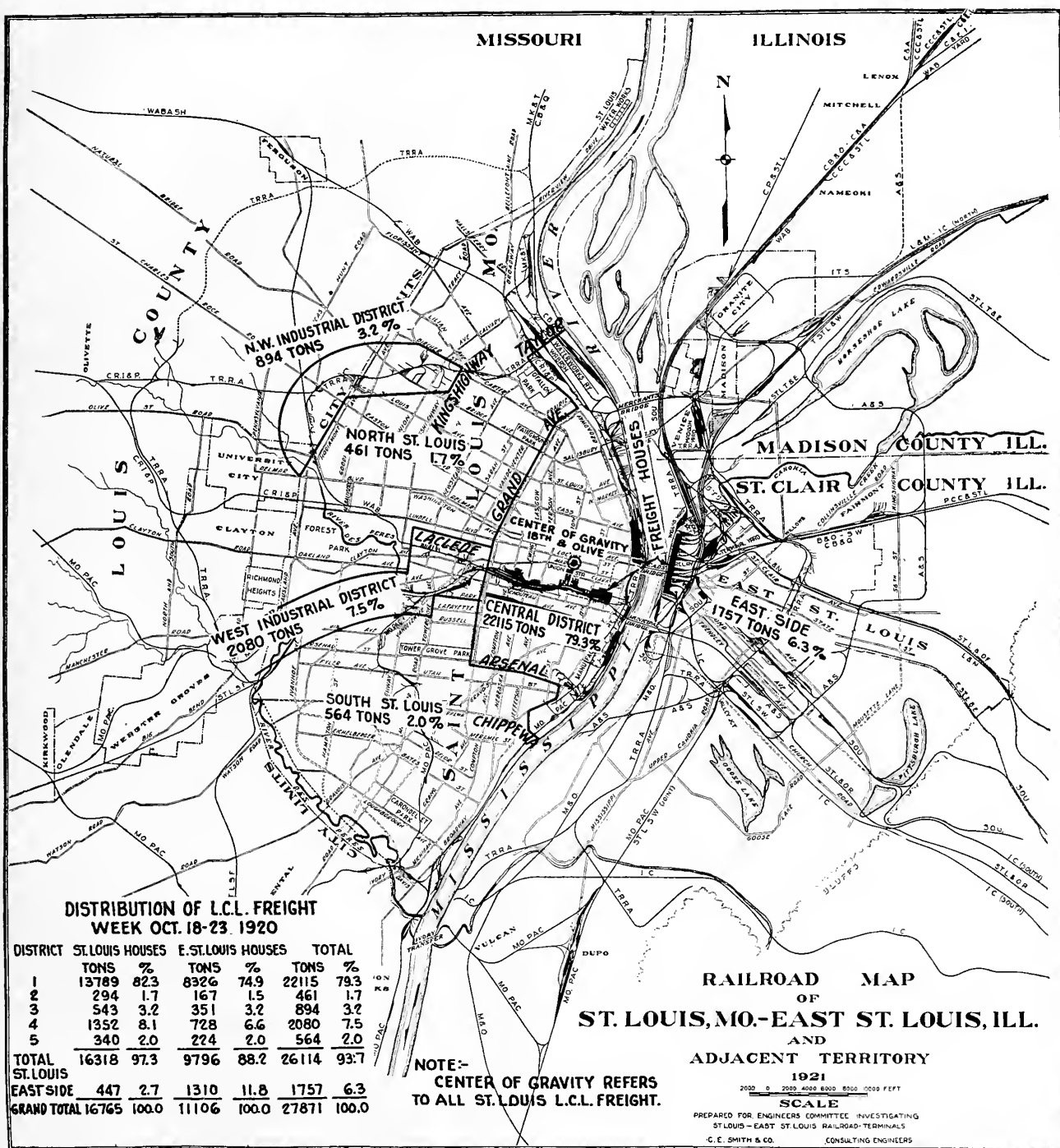


Fig. 85—Distribution of Local L. C. L. Freight in Six Zones—Week of October 18-23, 1920.

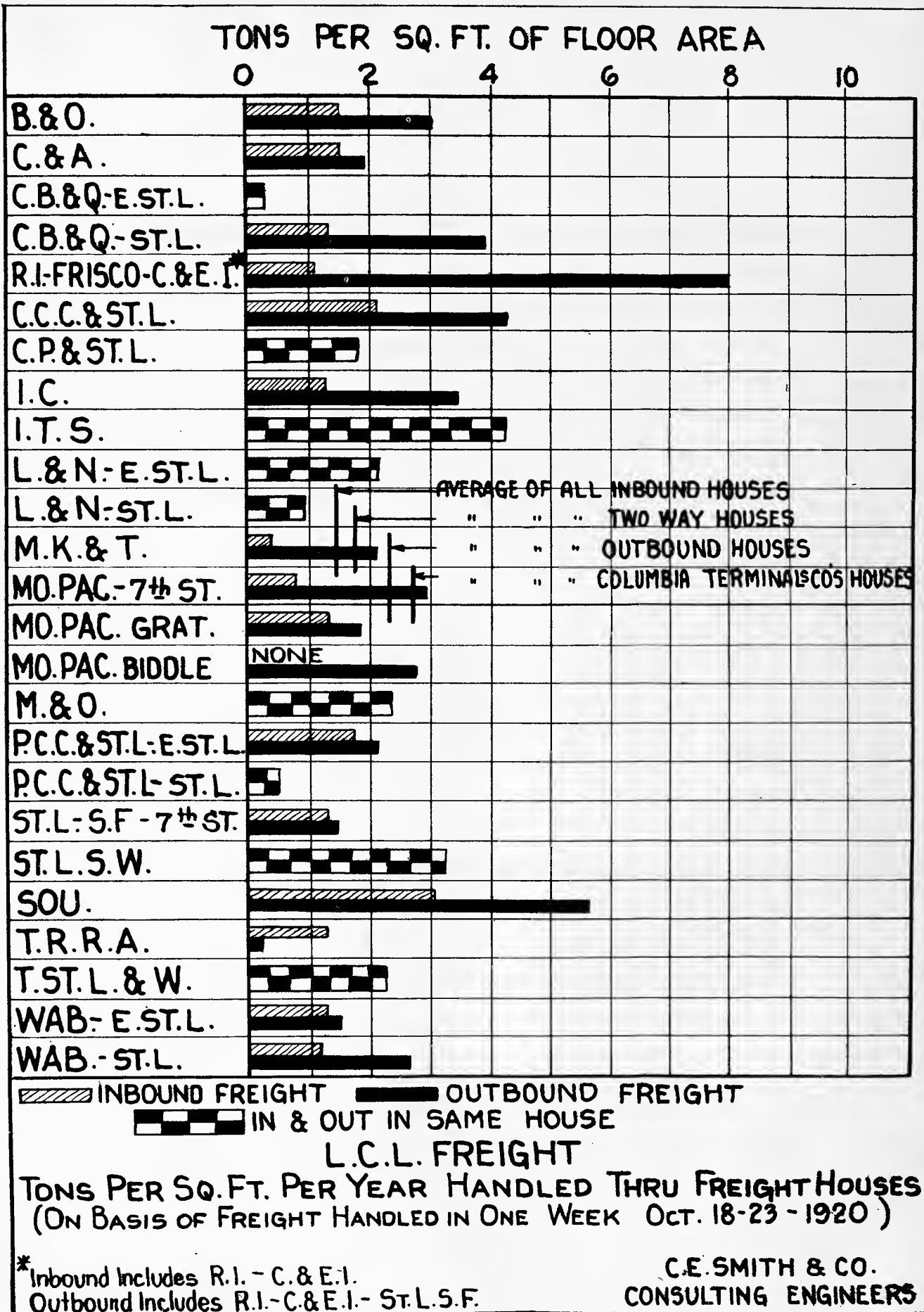
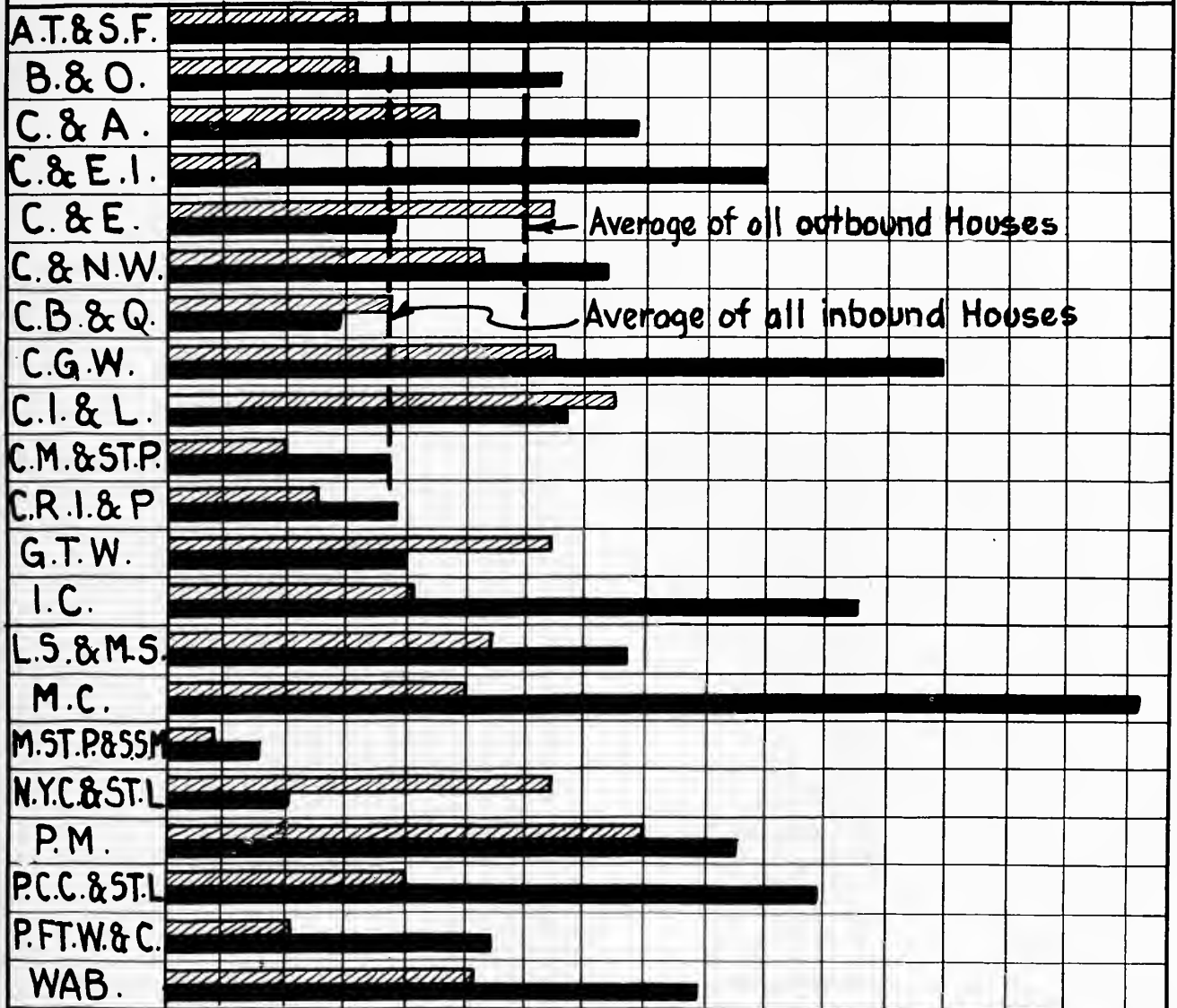


Fig. 86—Intensity of Freight House Use—Tons Per Square Foot.

TONS PER SQ. FT. OF FLOOR AREA

0 2 4 6 8 10 12 14 16



Average of all outbound Houses

Average of all inbound Houses

INBOUND FREIGHT OUTBOUND FREIGHT

L.C.L. FREIGHT

TONS PER SQ. FT. PER YEAR

HANDLED THRU CHICAGO FREIGHT HOUSES

(On basis of March-1913 business)

C.E. SMITH & Co.
CONSULTING ENGINEERS
ST. LOUIS, MO

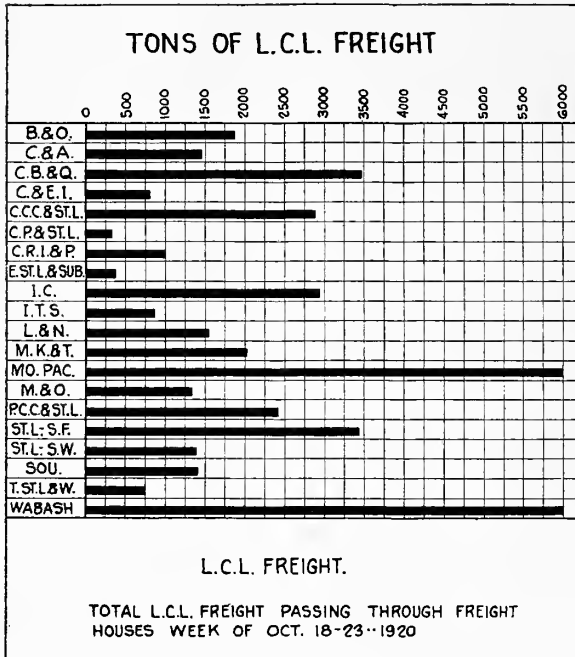


Fig. 88—L. C. L. Freight Passing Through Freight Houses—Week of October 18-23, 1920.

Outbound, 1.43 to 8.07—Average 2.18 tons per square foot per year,

Two way, 0.05 to 4.23—Average 1.57 tons per square foot per year.

Average for all houses:

Inbound, 1.46 tons per square foot per year, Outbound, 2.35 tons per square foot per year.

Two way, 1.73 tons per square foot per year.

The Columbia Terminals Company off-track universal freight stations handled at the rate of 2.68 tons per square foot per year in and out.

In this connection it is interesting to note the conclusion from a recent study of the Chicago freight tunnel terminals that platform space to and from the small tunnel cars is required at the rate of 25 square feet per ton per day, equivalent to 12 tons per square foot per year.

An exhaustive study of the Chicago l. c. l. freight houses by the Chicago Railway Terminal Commission based on the business handled through them in March, 1913, indicated they were used as follows:

Inbound, 3.65 tons per square foot per year, Outbound, 5.90 tons per square foot per year.

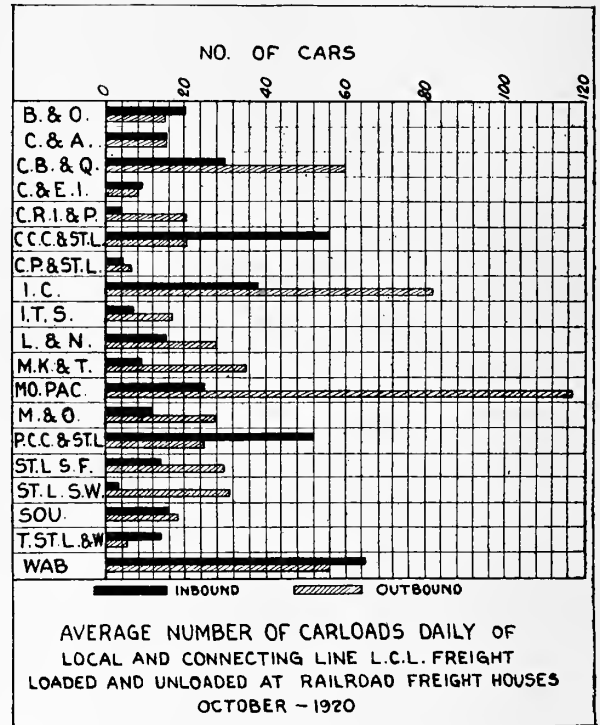


Fig. 89—Cars of Freight Loaded and Unloaded Daily at Freight Houses—Week of October 18-23, 1920.

While there was much complaint about the crowded conditions of the Chicago freight houses and delays to teams by reason of their inadequacy, there is such a wide margin in favor of the freight houses in the St. Louis-East St. Louis District that it appears they are as a whole adequate in size.

While there is comparatively little congestion on the team side of the railroad freight houses in the St. Louis-East St. Louis District even during the busy hours, the opposite was found to be true in Boston by the Boston Railway Terminal Commission in its investigation of conditions there in 1915 described in its report as follows:

"Under the system in vogue at the Boston railroad terminals, teamsters are required to place their outbound freight at specially designated doors. This means that frequently teamsters are required to visit several doors to deliver a load of freight. In turn this means delay, and naturally tends to congestion. Not infrequently the freight doors are jammed full of freight when other loads arrive, causing more delay. Then, according to the evidence of teamsters, freight after it reaches the freight

TABLE XXVII—TONNAGE HANDLED—FREIGHT HOUSE AREAS—AND INTENSITY OF USE OF L. C. L. FREIGHT HOUSES BASED ON FREIGHT HANDLED IN WEEK OF OCTOBER 18-23, 1920.

EAST ST. LOUIS HOUSES	TONS PER YEAR		FREIGHT HOUSE FLOOR AREAS		TONS PER SQUARE FOOT PER YEAR	
	Inbound Houses	Outbound Houses	Inbound Houses	Outbound Houses	Inbound Houses	Outbound Houses
B. & O.....	51,324	42,744	34,000	14,000	1.51	3.05
C. & A.....	41,236	34,372	26,730	17,820	1.54	1.93
C. B. & O. (East).....	.....	6,604	.....	.....	.....	0.37
C. C. & St. L.....	109,980	48,360	50,000	11,451	2.16	4.22
C. P. & St. L.....	.....	22,776	.....	.....	.....	1.81
I. C.....	37,440	113,412	29,483	32,483	1.27	3.49
L. & N.....	.....	.....	.....	.....	.....	2.18
M. & O.....	.....	67,028	.....	.....	.....	2.34
Pennsylvania.....	59,280	46,540	34,200	21,600	1.73	2.16
Southern.....	39,624	35,100	12,852	6,240	3.08	5.63
T., St. L. & W.....	.....	39,156	.....	.....	.....	2.27
Wabash (East).....	41,288	29,432	32,600	19,680	1.27	1.50
Total East St. Louis Houses.....	380,172	349,960	219,865	123,274	1.73	2.85
ST. LOUIS HOUSES						
C. B. & O. (West).....	44,928	129,116	32,760	32,760	1.37	3.94
C. & E. I.—R. I.—Frisco.....	30,056	110,448	25,875	13,680	1.16	8.07
I. T. S.....	.....	.....	.....	.....	.....	4.23
L. & N.....	.....	22,672	.....	.....	.....	0.91
M. K. & T.....	12,012	65,156	29,240	22,320	0.41	2.16
Mo. Pac. (Seventh).....	22,516	65,156	28,186	22,120	0.80	2.95
Mo. Pac. (Gratiot).....	26,312	104,832	20,278	57,262	1.30	1.83
Mo. Pac. (Biddle).....	.....	56,628	.....	20,596	.....	2.75
Pennsylvania.....	.....	.....	.....	.....	.....	0.45
St. L.—S. F.....	22,360	109,772	17,664	76,700	1.27	1.43
St. L.—S. W.....	.....	.....	.....	.....	.....	3.24
T. R. R. A.....	31,720	14,196	25,670	57,670	1.24	1.50
Wabash (West).....	115,336	125,840	71,314	47,055	1.62	2.67
Total St. Louis Houses.....	305,240	764,192	250,987	350,163	1.22	2.18
Total for All Houses.....	685,412	1,114,152	470,852	473,437	1.46	2.35
Columbia Terminals Co.....	323,400 tons In and Out.	350,168	120,821 square feet All Houses.	202,523	All Houses—2.68.	

house is not usually loaded directly into cars, but lies in these houses and frequently is moved once before being loaded into cars.

"The freight which arrives at Boston for forwarding to other railroads or steamships, or which is to be teamed to points in the Metropolitan District, gives a tremendous amount of needless trouble to teamsters and business men, and, according to the testimony of both, causes much confusion and delay.

"The supposed location of freight which arrives at the railroad terminals is indicated on freight slips given out at the various railroad freight offices. Teamsters are required to secure these slips, and in some instances the freight offices are located at points far distant from a number of the freight houses. Loss of time and useless expenditure of energy results. An illustration of this was witnessed by a representative of the Commission, who saw an intelligent teamster compelled to waste considerable time and to do an unnecessary amount of teaming because he was required to drive to the Warren Bridge to get directions in connection with a case of freight which was at an East Cambridge freight house.

"On other occasions a representative of this Commission accompanied teamsters on their rounds of the freight sheds and saw these men

forced to waste much time in search of freight because of wrong directions received at freight offices. These directions, however, were apparently the best that the freight clerks could give at that time. Teamsters interviewed by the Commission's representatives declare this to be nothing unusual.

"According to statements of many teamsters—and a representative of the Commission saw illustrations of this—even after freight is located, it is frequently found buried under other freight. At times teamsters are required to move a ton or more of freight to get at the freight which they seek. This is what teamsters call "digging" freight out. It is a slow process and on some occasions it means that teamsters have to telephone to the offices of their employers to get assistance.

"Master teamsters told representatives of the Commission that there is always uncertainty as to where freight which arrives at this city may be found. They say that the situation has become gradually worse during the past five years.

"This Commission secured from the letter files of one of the biggest teaming firms of Metropolitan Boston copies of several hundred letters of complaints to the different railroads of the city respecting shipments. The Commission also inspected the replies to these letters. This correspondence was a serious indication of the conditions which exist at Boston freight terminals. It told of freight that was days overdue; shipments of which portions were missing; overcharging; freight house confusion and delays, etc.

"In one letter the teaming firm inquired as to the whereabouts of a portion of a comparatively small shipment, the rest of which, the letter stated, had been found at several different freight house doors. The numbers of the doors at which portions of the shipment had been found were given in the communication, apparently merely to indicate the vicinity in which the rest of the shipment might be lying."

Although Boston has only three railroad companies, there are about 50 freight houses with 1200 doors. The New Haven Road has twelve houses at one location. Conditions have not changed substantially since the Boston report was written in 1915.

No such conditions exist in the St. Louis-East St. Louis Railroad terminals. With a few exceptions shippers are not required to deliver their freight at designated doors. As each railroad has only one inbound house, there is no doubt where railroad freight may

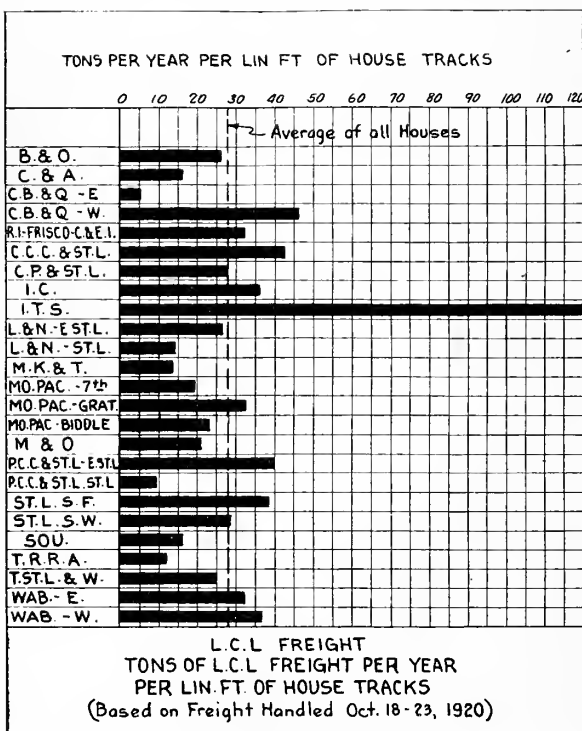


Fig. 90—Intensity of Freight House Use—Tons Per Lin. Ft. of House Tracks.

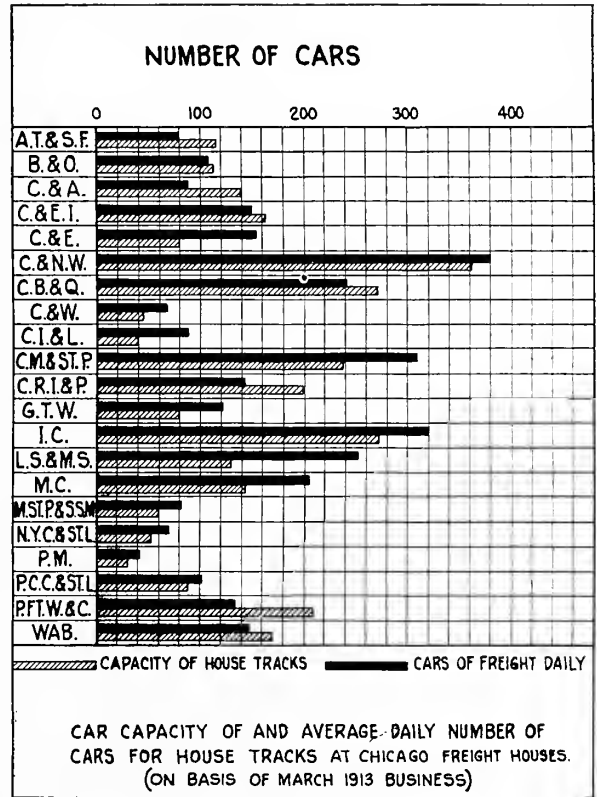


Fig. 92—Car Capacity and Daily Use of House Tracks
at Chicago.

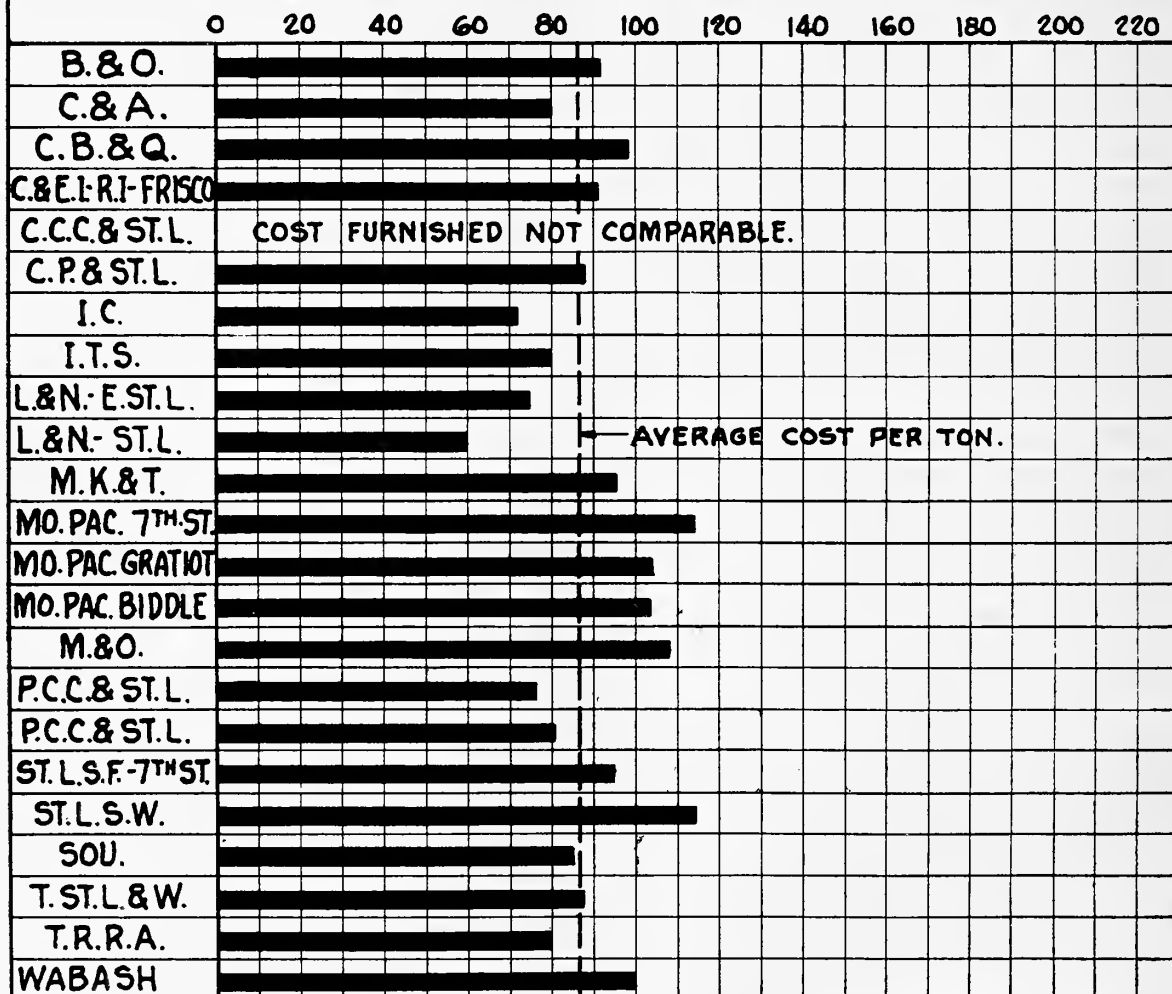
stations direct to or from the consignee or consignor. As the great bulk of such freight is handled by the east side lines and is therefore readily accessible to shippers, this situation is very satisfactory.

The freight of St. Louis proper to and from east side lines may be handled by various methods which together with others that have been considered are outlined as follows:

[illegible]

**COST PER TON IN CENTS
FOR
HANDLING L.C.L. FREIGHT
IN
ST. LOUIS AND EAST ST. LOUIS FREIGHT HOUSES**

BASED ON RATES OF PAY IN EFFECT LAST HALF OF 1920



COSTS GIVEN ABOVE ARE NOT DIRECTLY COMPARABLE AS THE LOCAL AGENTS DO NOT COMPILE THEM ON THE SAME BASIS. EXPERT AUDIT OF EACH HOUSE WOULD BE REQUIRED TO SECURE COMPARABLE FIGURES.

Fig. 93—Cost Per Ton for Handling L. C. L. Freight.

(1) Through the individual freight stations in East St. Louis or St. Louis as the case may be.

(2) Through universal on-track freight stations.

(3) Through individual on-track freight stations of each railroad to be provided on each side of the river at various locations, and immediately adjacent to the central business district.

(4) Through the present freight stations and individual on-track freight stations located in St. Louis as close to the business district as practicable, and so close together as to form practically a joint universal station, receiving and delivering freight at certain designated doors for each railroad.

(5) Through universal off-track freight stations of the various transfer companies.

From the standpoint of the shipper, good service consists in:

(a) Minimum time consumed in the movement of freight between point of origin and destination.

(b) Minimum loss and damage to goods resulting from cartage, rehandling and transportation in cars.

(c) Cost and convenience to shipper.

It is evident that the terminal conditions with which we are concerned can enter into "a" only as they affect the movement of freight between the shipping platform and the beginning and end of the road haul movement. It is likewise evident that freight has made a poor movement if, the dray haul being short, it is loaded into cars within a short time after leaving the shipping platform and then is held 24 or 48 hours before it begins its road haul movement, because the location of the freight house where the freight is loaded or terminal method of handling makes it impossible to get the car into a road train sooner. On the other hand, freight which has made a comparatively long dray haul and is so handled as to reach a freight house so located that the car into which the freight is loaded moves in road haul the same day loaded has made a good movement even though it has passed

promptly through an off-track universal freight house in doing so.

While it might appear as to "b" that in passing through such off-track freight houses the extra handling would result in additional loss and damage, the records indicate that the loss and damage is small. That element may, therefore, be eliminated as having any material bearing on the decision as to the best method for handling l. c. l. freight in this terminal.

In regard to "c," cost to shipper. Inasmuch as all freight which originates or is destined outside of a fixed zone is accepted or delivered in St. Louis or East St. Louis at the same freight charge to the shipper, that element has no bearing on the decision as to proper method.

From the standpoint of the shipper, therefore, time and convenience must be the deciding factors.

The carriers' interest must be taken into account and any method which will substantially add to the overhead in the way of carrying charges or to operating costs so as to reduce net earnings or make addition to the rates necessary cannot be justified.

A discussion of the various methods of handling freight, previously enumerated, follows:

(1) Through the individual freight stations in St. Louis or East St. Louis as the case may be.

While the east side lines must continue individual freight houses in East St. Louis, it is evident, from the relatively large amount of St. Louis l. c. l. freight that is handled through other methods, that such houses must be supplemented by facilities and methods which will more adequately meet the actual local situation, physical and otherwise.

(2) Through universal on-track freight stations.

A study of the tables showing through what channels freight moves at present shows clearly that the Terminal Association freight house at Tenth street, while being a universal station served very largely by trap cars, handles a negligible percentage of the freight to and from St. Louis. Therefore, a universal on-track station dependent on trap car service

cannot be considered as a satisfactory method of handling freight.

(3) Through individual on-track freight stations of each railroad, to be provided on west side of the river at various locations and immediately adjacent to the central business district.

The provision of on-track individual freight stations in St. Louis immediately adjacent to the central business district by all east side lines would require at least nine roads to secure locations in St. Louis and construct suitable tracks, driveways, and freight houses. The location of such houses where they would even approach the convenience of the present off-track universal freight stations would entail an expenditure for property and construction that would result in such an enormous addition to the overhead of the railroads as to remove that method from further consideration.

(4) Through the present freight stations and individual freight stations located in St. Louis as close to the business district as practicable, and so close together as to practically form a joint universal station, receiving and delivering freight at certain designated doors for each railroad.

While it is evident, as shown above, that it is impracticable to provide locations for freight houses as convenient to the shippers as are the off-track freight stations, a location is suggested which lends itself in many ways to such use.

Suggested St. Louis Locations for Freight Houses of East St. Louis Lines

Between Franklin avenue and Tyler street, St. Louis, east of Broadway, the railroads own large areas of land on which the Wabash, the C. B. & Q., the C. R. I. & P., the C. & E. I., the St. L.-S. F., the Mo. Pac., the L. & N., Pennsylvania, the St. L. S. W., and the M. K. & T. have freight houses and team tracks. Although the railroads own almost the entire area, there are occasional lots and blocks held by private interests. By purchasing the odd lots and consolidating practically the entire area, except the plant of the Laclede Gas Light Company, the Union Electric power house, and the group of refrigerator and stor-

age warehouses near the Union Electric power house, there would be available a strip of land one mile long with a width from 800 feet to 1100 feet, containing about 100 acres.

On this area the streets could be relocated to suit any new construction. It is entirely capable of being developed intensively, so as to provide an independent freight house for every St. Louis and East St. Louis railroad either as a single level layout like the present freight stations or in connection with the development of air rights, with upper floors for storage, light manufacturing and other similar purposes.

These houses could be connected by a system of tunnels underneath the tracks or overhead runways to permit the convenient and economical interchange of l. c. l. connecting line freight of every railroad in the St. Louis District, by platform tractors and trailers.

The site has the further advantage of being parallel with and a convenient distance from the river front owned by the City of St. Louis, on which dock development may be carried out if necessary in future for the co-ordination of river and rail traffic.

Such a layout would require a large yard between Tyler street and the Merchants Bridge, a distance of one and one-half miles, where the land is practically unoccupied on both sides of the railroad tracks except by lumber yards, and where it would not be difficult at all to secure a strip 300 feet wide for an ultimate yard capacity of 3,000 cars. In that distance only six or eight streets would have to be carried under the track to provide access to the river front. A map of North St. Louis has been prepared for the purpose of studying this problem.

The area east of Broadway from Franklin avenue to Tyler street that is available is equal to the sum of the areas of all North St. Louis freight stations, all East St. Louis freight stations, and a proportional area of the South St. Louis freight stations of the Mo. Pac. and St. L.-S. F. in proportion to the amount of connecting line freight handled through them.

The site being on a side hill is admirably

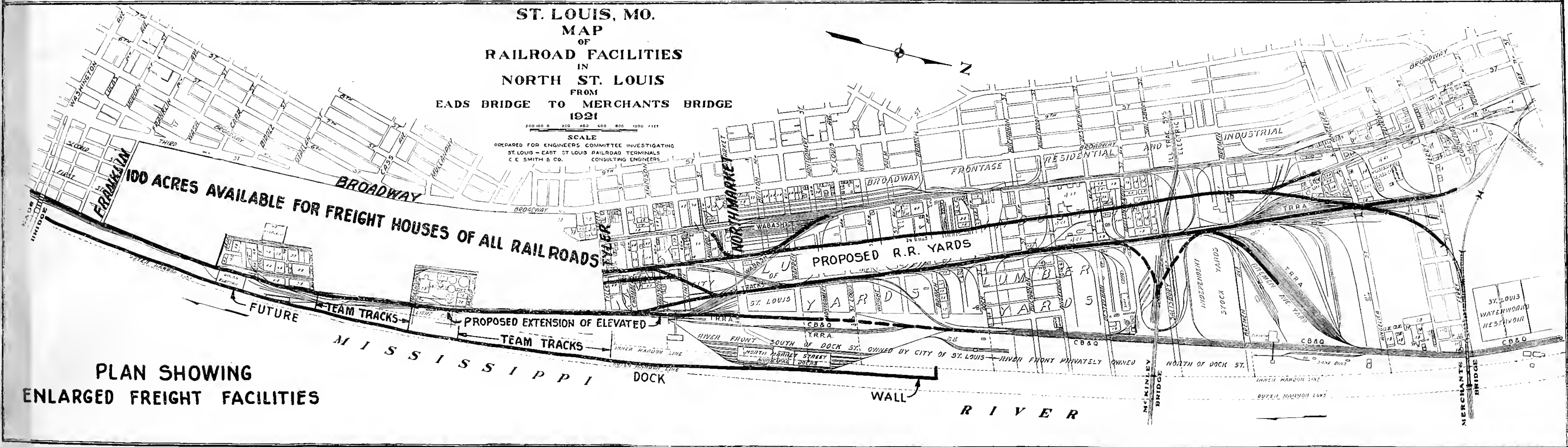
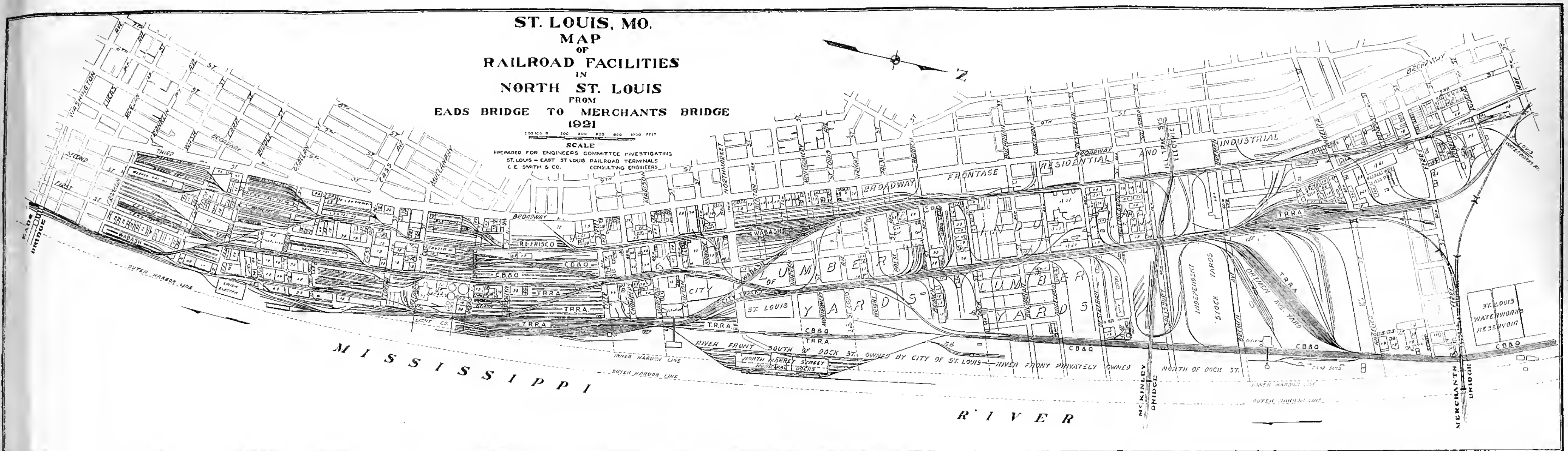


Fig. 94—Present Railroad Facilities in North St. Louis and Proposed Enlarged Facilities.



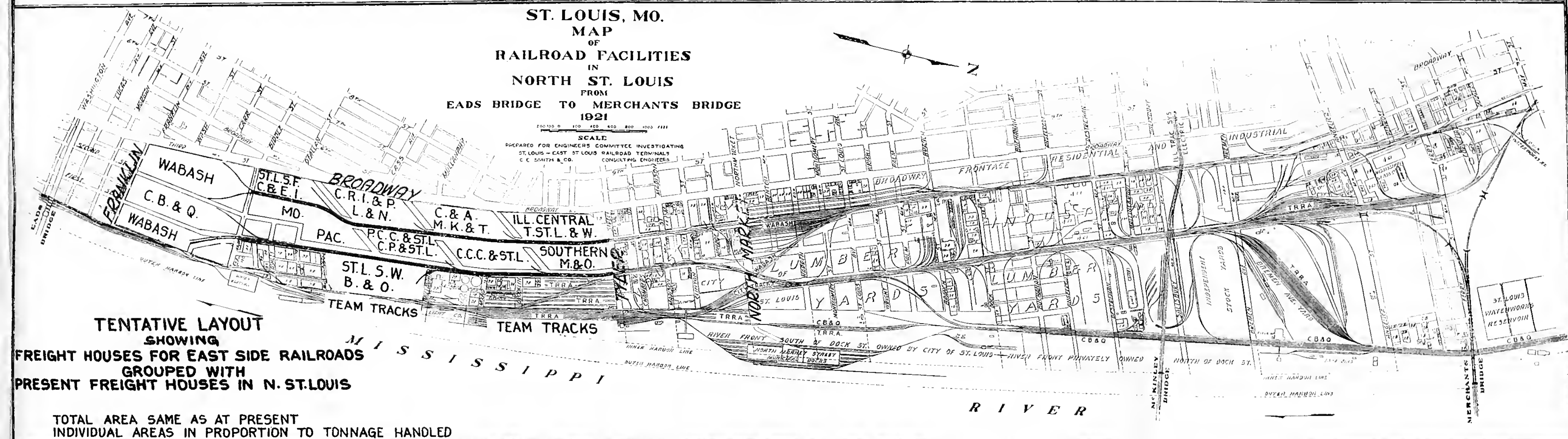
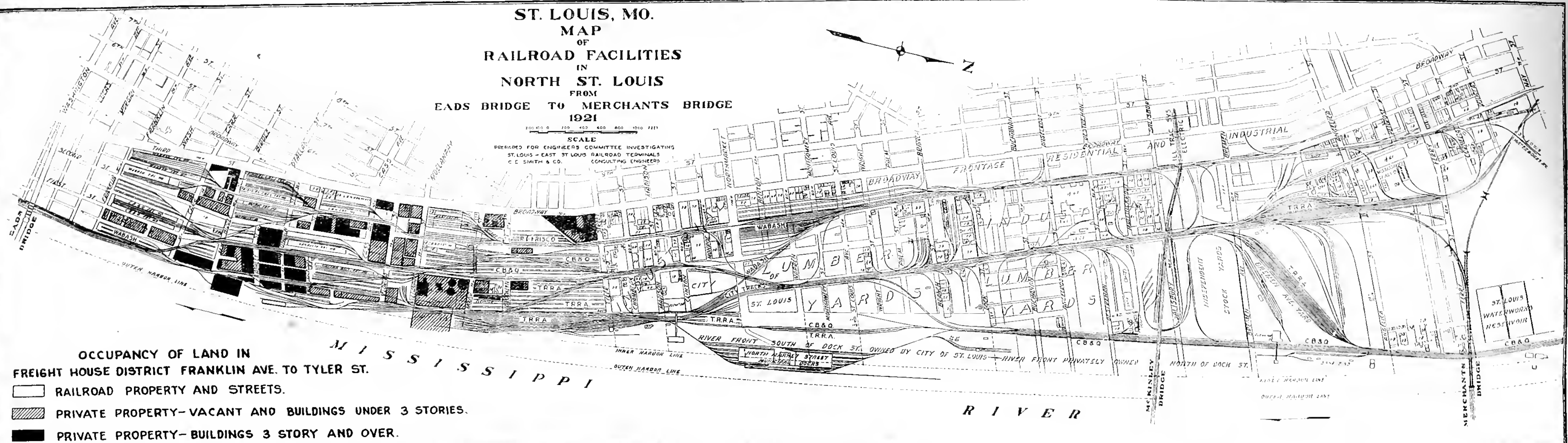


Fig. 95—Occupancy of Land in North St. Louis Freight House District and Tentative Layout Showing Locations in North St. Lou's for Freight Houses of East Side Lines.

THE UNIVERSITY OF CHICAGO

STATE PROPERTY - BUILDINGS & STORES AND OTHER

[illegible]

THE FREIGHT HOUSE IN N. ATLANTA

INDIVIDUAL AREAS IN PROPORTION TO TONNAGE HANDLED
TOTAL AREA SAME AS AT PRESENT

adapted for single level and multiple story development. The tracks may be entirely separated from the streets at a cost in keeping with the savings that can be effected.

The freight houses and driveways would extend for a mile along Broadway, a wide street well located for this purpose, lying as it does as a ladder track intersecting all north and south streets from Third street to Eighth street. At Tyler street, Broadway is only four blocks from Twelfth street.

All east and west streets from Franklin avenue to Tyler street, twelve in all, connect with Broadway.

First and Second streets connect with this area on the south and north.

This area is closer to the business district than any other area of adequate size that is available, and has convenient rail connections in all directions.

Freight stations of the east side lines would be much closer to the St. Louis business district if located in North St. Louis than their present location in East St. Louis.

At present the Pennsylvania east side house is over one mile farther away than the Wabash, the nearest St. Louis house; over one-half mile farther than the St. L. S. W., the most distant St. Louis house. The C. P. & St. L. east side house is two miles farther than the nearest, and over a mile and a quarter farther than the most distant St. Louis freight house.

The suggested North St. Louis location for freight houses of east side railroads would be more than a mile closer to the St. Louis business district than their present locations in East St. Louis.

While, as has been pointed out, the dray haul to the proposed locations would be shorter than to the present houses across the river, it is necessary, before the relative value of the service to the shipper can be determined, to consider the probable time that will be required between the shipping platform and the road haul.

There are at present a considerable number of cars loaded each day in St. Louis with

l. c. l. freight and switched across the river where they are made up into road trains. The proposed arrangement of freight houses would increase that movement at least fourfold. The scheduled leaving time of freight trains at East St. Louis is from seven to nine p. m.: The loading of cars should not be stopped before five p. m. To prepare, seal and move the cars to the East side of the river, and there classify and make them up into road trains ready for movement on schedule in the four hours between five and nine p. m. manifestly involves serious operating difficulties even under the most favorable circumstances.

The physical obstacles to the operation required to be performed would make it probable that more freight would fail to make road haul connections on the same day the freight was accepted by the railroad from the shipper, than under present conditions.

While the time between the shipping platform and the loading of the car in the proposed location is comparatively short, the time consumed in the yard movement of the car promises to be so great that the time between shipping platform and road haul by the proposed method might be greater than by the universal off-track station method; in which case, the shipper would not be as well served.

From the standpoint of the railroad, the cost of operation has to be considered.

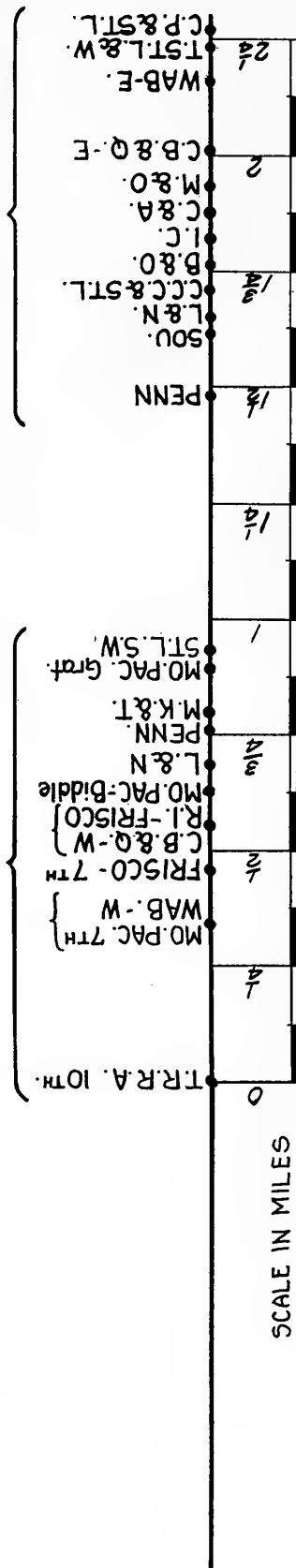
For the week of October 18-23, 1920, the cost of handling l. c. l. freight across the river by drays and trap cars amounted to:

By drays, 8225 tons @ \$2.60.....	\$21,385.00
By car, 1662 tons, @ 1.00.....	1,662.00

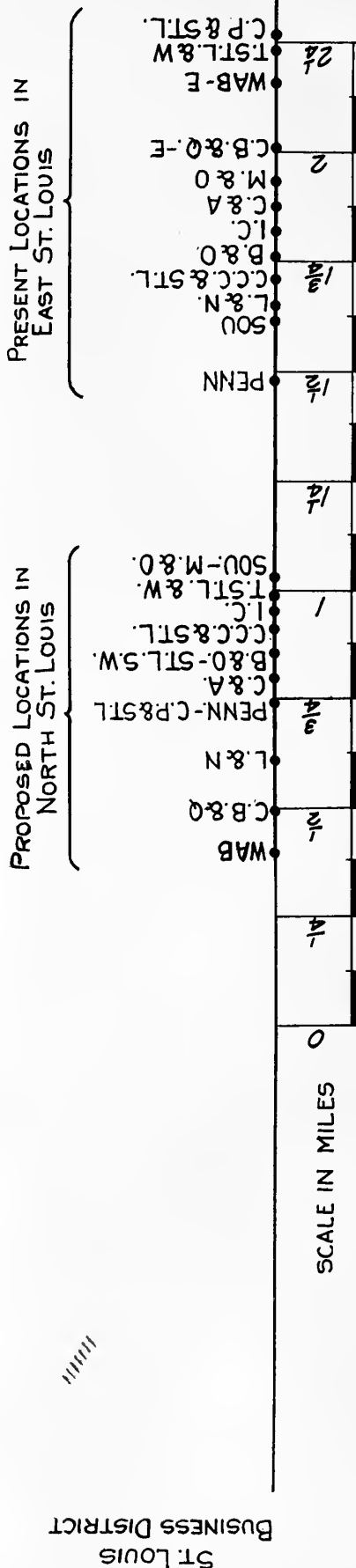
Under the present method of handling, the above costs are absorbed by the railroads. If the east side lines establish freight houses in St. Louis, the drayage charges of the transfer companies on freight handled through such houses would not continue to be absorbed by the railroads and the amount shown above, or \$23,047.00, would be retained by them.

However, to switch this amount of freight

35% OF ST. LOUIS L.C.L. FREIGHT
HANDLED IN EAST. ST. LOUIS FREIGHT HOUSES



COMPARATIVE DISTANCES BETWEEN ST. LOUIS BUSINESS DISTRICT
AND
ST. LOUIS - EAST ST. LOUIS FREIGHT HOUSES



**COMPARATIVE DISTANCES BETWEEN ST. LOUIS BUSINESS DISTRICT
AND
PRESENT AND PROPOSED LOCATIONS OF
FREIGHT HOUSES OF EAST SIDE LINES**

PREPARED FOR ENGINEERS COMMITTEE INVESTIGATING
ST. LOUIS - EAST ST. LOUIS RAILROAD TERMINALS
C. E. SMITH & Co CONSULTING ENGINEERS
ST. LOUIS, MO. 1921

Fig. 96—Comparative Distances Between St. Louis Business District and Present and Proposed Locations of Freight Houses.

across the river to and from the proposed location in cars would cost:

9887 tons @ \$1.00.....	\$ 9,887.00
1261 tons E. St. Louis l. c. l. freight to be handled across the river between North St. Louis and East St. Louis @ \$2.60	3,278.60
The net saving is therefore, per week	9,883.40
Amounting to, per year.....	513,936.80

As connecting line l. c. l. freight would be handled through the same facilities at an estimated saving per year of \$171,548.00, as shown elsewhere in the report, the total indicated saving would be \$685,484.80.

The above estimate is based on the present switching charges of the Terminal Railroad Association. If the estimates were based on the actual cost of handling cars to and from the proposed St. Louis freight houses by the roads' own engines on a trackage charge, the saving would be greater. As it would be impossible to load East St. Louis l. c. l. freight in separate cars, such freight would have to be handled through to St. Louis and would be subject to some delay. However, even if the savings be doubled, the amount would not be sufficient to pay the carrying charges for freight houses in St. Louis for all east side lines, including the extra freight yards and collateral facilities that would be required, although it is possible that other conditions may eventually resolve the doubt in favor of the west side.

The conclusion appears inevitable that, under present conditions, there would not be sufficient economy nor advantage to the St. Louis shippers or to the east side railroads to justify the construction at this time of St. Louis freight houses for the east side lines. However, if it should be found in future that the development of air rights above freight stations in St. Louis by the construction of multiple story commercial buildings would carry all or a considerable portion of the fixed charges of the freight stations, less saving would be required to justify such a step than if the saving had to carry the entire fixed charges in future.

(5) Through universal off-track freight stations of the various transfer companies.

Of St. Louis inbound freight received at St. Louis freight houses 94.4 per cent was handled by drays (5.9 per cent of this was handled by the Columbia Terminals Co.); 5.6 per cent was handled by trap cars.

Of St. Louis outbound freight shipped from St. Louis freight houses 88.1 per cent was handled by drays (13.9 per cent of this was handled by Columbia Terminals Co.); 11.9 per cent handled by trap cars.

Of St. Louis inbound freight received at East St. Louis freight houses, 40 per cent was handled by transfer companies' drays through off-track stations; 38.1 per cent was handled by other trucks and drays direct to shipper; 16.1 per cent was handled by Terminal Railroad Association in trap cars through its Tenth street freight house; 4.3 per cent was handled in trap cars at Cupples Station; 1.5 per cent was handled in trap cars direct to consignees.

Of St. Louis outbound freight shipped from East St. Louis freight houses, 50 per cent was handled by the shippers to off-track stations and transfer companies' drays across the Mississippi River; 38.3 per cent was handled by other trucks and drays direct from shippers principally public drayage companies; 3.5 per cent was handled by Terminal Railroad Association in trap cars from its Tenth street freight house; 5.4 per cent was handled in trap cars from Cupples Station tenants; 1.0 per cent was handled in trap cars from Cupples Station public platform; 1.8 per cent was handled in trap cars direct from shippers.

The most prominent feature of the above figures is the very small percentage of freight handled in trap cars although there are three opportunities for doing so at the same rates as when drayed, as follows:

Between shippers having sidings and the individual freight houses.

Between Terminal Railroad Association at Tenth street and individual freight houses;

Between Cupples Station and individual freight houses.

Notwithstanding these opportunities the shippers seem to have expressed their preference in no uncertain way in choosing to ship

such a great proportion of freight by dray to and from the railroad freight houses direct or through the off-track station of the transfer companies in connection with the east side lines.

In 1906, when the east side railroads extended their bills of lading to St. Louis, it was realized that some means would have to be provided in St. Louis for the receipt and delivery of their St. Louis l. c. l. freight. At that time the only freight station available for that business was the Terminal Railroad Association Tenth street freight station, which was entirely inadequate.

Serious consideration was given to the construction of one or more large central freight stations for this purpose, but no action was taken. In the meantime, the east side railroads arranged with the transfer companies to dray the freight across the river, absorbed their charges and recognized their off-track stations as the St. Louis freight stations of the east side lines. These have become so popular that the Tenth street freight house of the Terminal Railroad Association, which was formerly overburdened, is not now used to anywhere near its capacity.

There are about twenty public transfer companies whose charges between the east side freight houses and the west approach to Eads Bridge are absorbed by the railroads, but only three operate off-track freight stations and are recognized by the railroads in the application of rates to and from such stations.

In the off-track stations of the transfer companies, freight is received from shippers and consolidated for delivery by dray loads to individual railroads. Inbound freight is handled on return trips of the transfer companies to stations, and delivered to trucks or wagons of consignees.

As the transfer companies drays average six tons per load, this practice reduces congestion at the freight houses by reducing the number of units handling freight. This is one outstanding advantage of universal stations.

The present off-track stations of the transfer companies are generally located east of the business district. It would be more conven-

ient to the shippers if those stations could be scattered more nearly in proportion to the distribution of freight.

The study indicates that additional off-track stations might be located about as follows:

Lucas avenue near Sixteenth street,
Walnut street near Eighteenth street,
Lucas avenue near Tenth street,
First street near Washington avenue,
Broadway and Grand avenue,
Vandeventer avenue and Market street.

The shipper would have the advantage of a freight station close at hand removed from the congested district and would be relieved of the burden of time and expense involved in visiting several freight stations. His shipments would be distributed at the off-track station among several drays and consolidated with other shipments for direct movement to individual railroads and vice versa in opposite direction.

The City would have the advantage of less wagons in the streets in the congested districts near the railroad freight houses.

The railroads would have the advantage of less units to take care of and less congestion at freight houses.

Such off-track freight stations would readily fit into store door delivery and pick up. The shipper could handle his own freight between store door and the district off-track station or could have it done by the transfer company. The off-track station properly located would be the first step. The subject of store door delivery has been given serious thought in recent years. On this subject the *Railway Age* of August 6th, 1921, said:

"The adoption of store door delivery is now being urged vigorously for the cities of New York and Baltimore, Md., with a fair prospect of success in one or both places. Store door delivery is quite familiar to Baltimore since that city has had nearly 45 years' experience with it up to 1911, when it was withdrawn because of certain features held to be discriminatory by the Interstate Commerce Commission. New York has no direct experience with store door delivery, although as a result of the terminal congestion during the war period such a service might have been inaugurated under government control had not the signing of the armistice intervened. As a means purely



Fig. 97—Columbia Terminals Co.—Universal Off-Track Freight Station—Fourth and Spruce Sts.



Fig. 98—Columbia Terminals Co.—Universal Off-Track Freight Station—Twelfth and Spruce Sts.

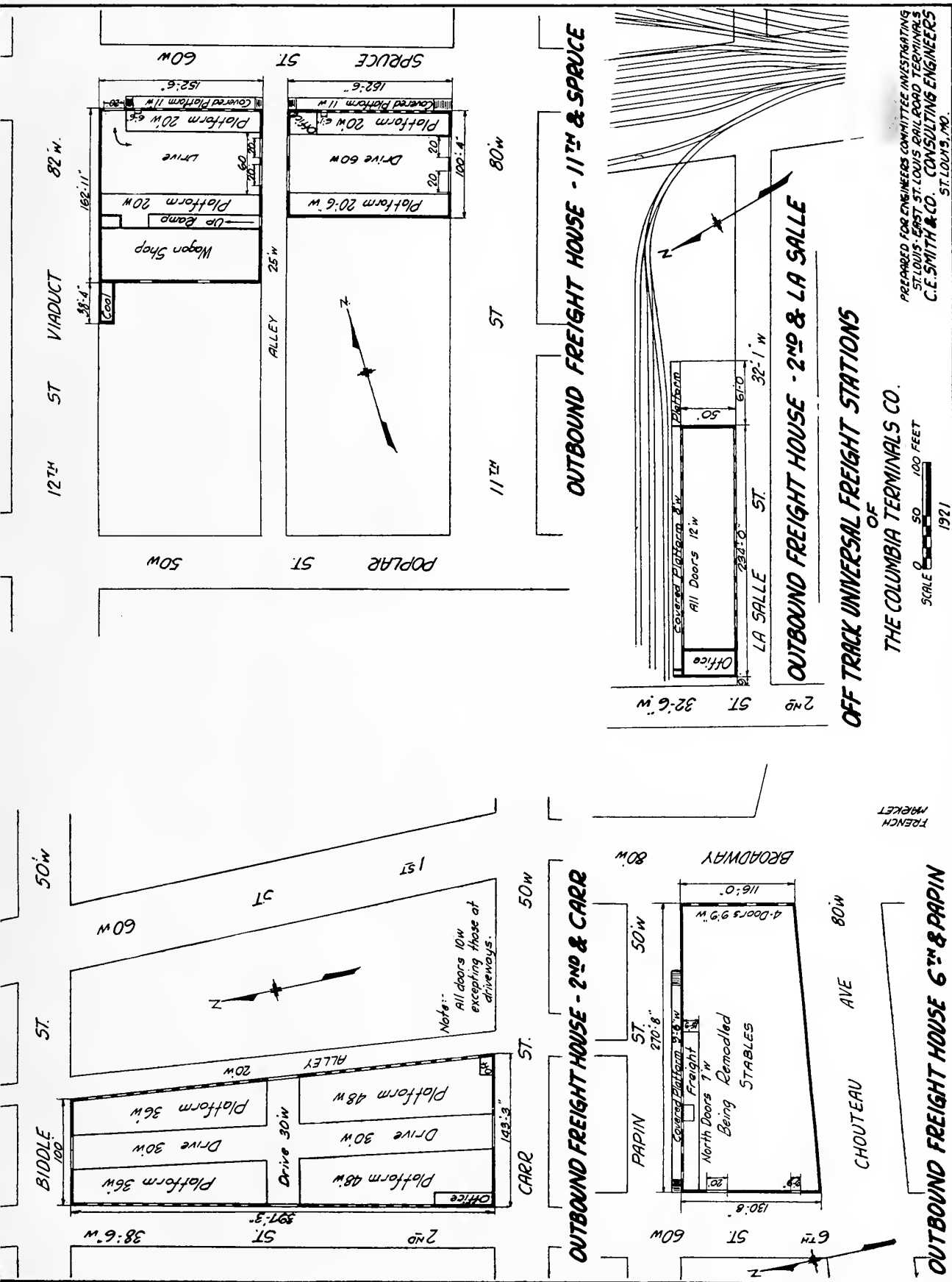
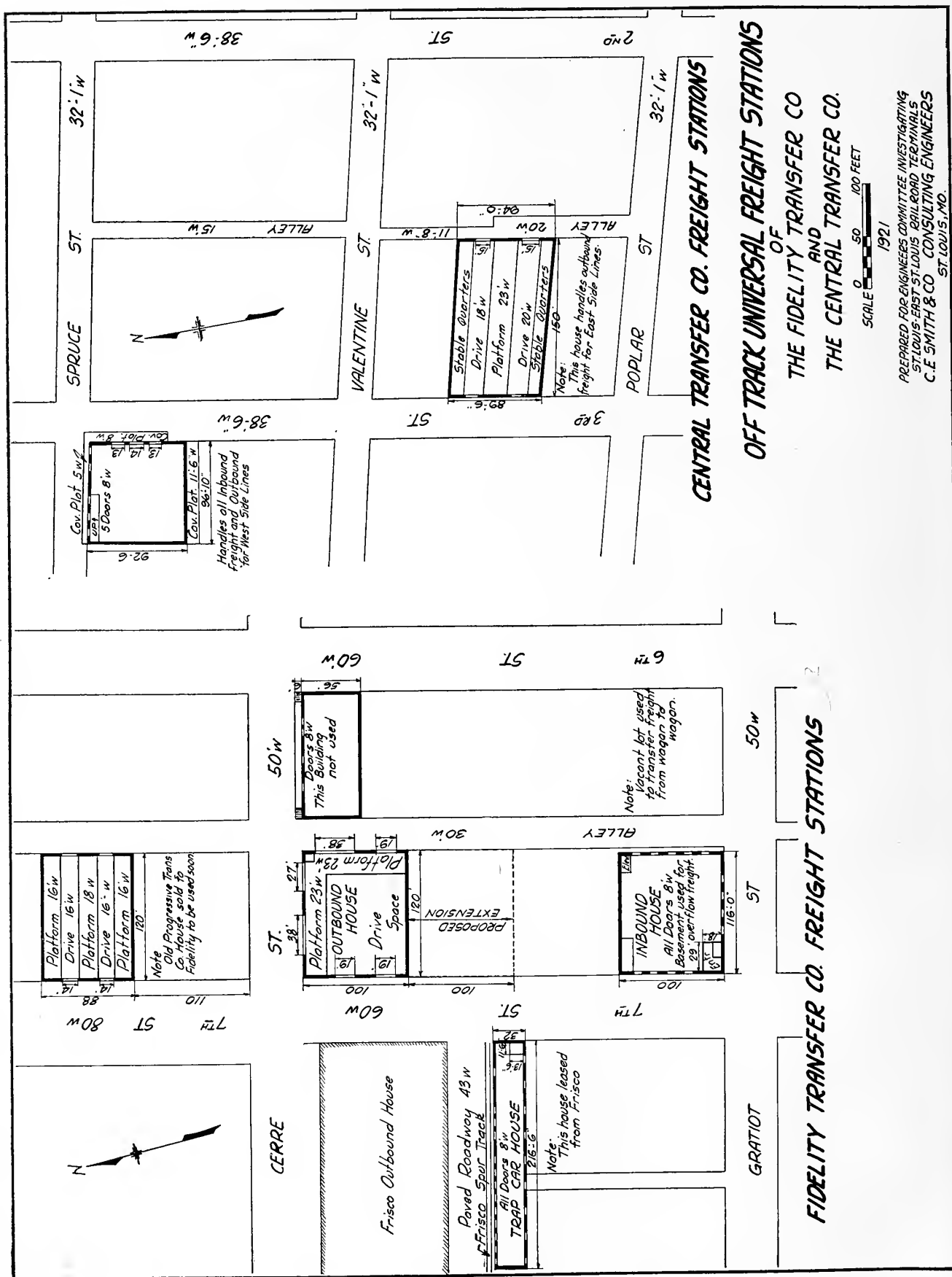


Fig. 100—Locations of Columbia Terminals Co. Freight-Stations Outbound Houses.



to lessen or relieve congestion at terminals, store door delivery has proved itself both in this country and others. Its practicability under the exceedingly complex terminal and business conditions now prevailing is not, however, entirely clear to a large number of railway and business men nor is it, as yet, recognized as being altogether desirable. The more advanced forms of this service have eliminated many of the features heretofore objectionable to the railroads, the trucking companies and the shippers. In their place newer methods are being advocated which apparently give the method a greater degree of flexibility. Baltimore, with its experience to look back to, is, in general, favorably inclined toward the adoption of a modified form of store door delivery and the results of the many meetings between representatives of railway companies, trucking concerns, and shippers point to an increase in possibility of its early adoption. Now New York is not so favorably inclined, but the idea is being pushed strongly as a relief measure for the port of New York. While the interest manifested in store-door delivery is, as yet, more or less local to the two cities involved, the developments at these two places should be watched closely. There is present the possibility that, should it be adopted at one or both places, public opinion would demand its inauguration at other important terminals."

In the Committee's opinion the principle of off-track universal freight stations is correct, and the facilities should be developed in St. Louis. The system presents the necessary element of flexibility which lends itself to a city whose street traffic is congested and whose commercial industrial districts are widely distributed. The system promotes the short haul of less than carload freight and the accumulation of such tonnage into lots which can be moved with greatest economy and dispatch to and from the rail haul. In developing the system in St. Louis, the rail carriers should assume close supervision so as to render it (without physical ownership) practically a carrier service, thus becoming directly responsible to the shipper and receiver of freight for the result of operating the system in the interest of efficient service to the public and economy to the carrier. Such stations should be located in sections of the city where tonnage to be handled may justify, and include,

so far as practicable, outer districts remote from main freight stations.

All such locations must be controlled primarily by the tonnage available, and thus by the possible extent of use of such facilities when provided, without encroaching upon the tonnage and operations of other stations. The possibility of handling freight between them and the railroad freight stations by electric street cars and on rapid transit lines should be kept in mind. These possibilities have been and are being given serious consideration in New York and Chicago.

Connecting Line L. C. L.

There are three methods of handling connecting line l. c. l.:

- (a) By trap cars;
- (b) By drays;
- (c) Through transfer houses.

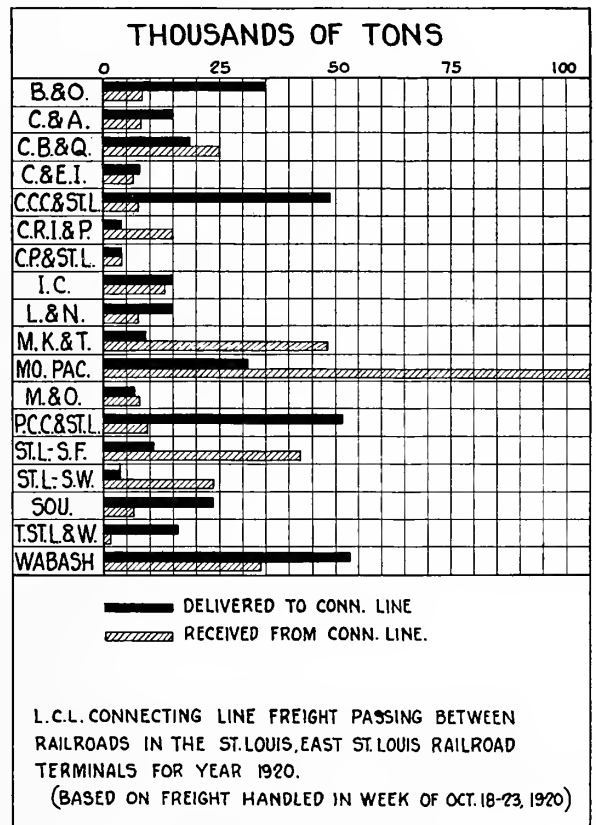


Fig. 102—Connecting Line L. C. L. Freight Handled by Each Road—Week of October 18-23, 1920.

LEGEND:
 — REPRESENTS TONNAGE OF L.C.L. CONNECTING LINE FREIGHT MOVING BY DRAY.
 ▨ REPRESENTS TONNAGE OF L.C.L. CONNECTING LINE FREIGHT MOVING BY CAR.
 NUMBERS FOR INDIVIDUAL ROADS INDICATE TONS MOVED BY DRAY AND CAR.
 COMBINED NUMBERS INDICATE TONS MOVED BY DRAY. FREIGHT MOVED BY CAR INCLUDED IN CARLOAD FREIGHT DIAGRAMS.

DIAGRAM SHOWING DISTRIBUTION OF CONNECTING LINE L.C.L. FREIGHT PASSING THRU ST. LOUIS - EAST ST. LOUIS R.R. TERMINALS DURING WEEK OCT. 18-23, 1920.

PREPARED FOR ENGINEERS COMMITTEE INVESTIGATING ST. LOUIS - EAST ST. LOUIS RAILROAD TERMINALS C.E. SMITH & CO. CONSULTING ENGINEERS

In the St. Louis-East St. Louis District it is handled through the same freight houses as the local freight and is transferred between railroads freight houses partly by drays and partly by railroad cars, commonly called "trap cars." During the week of October 18-23, 1920, the following amounts were handled:

By dray—
5276 tons (4279 crossed the river)
 By trap car—
1691 tons (1361 crossed the river)

ton for loads over 15,000 lbs.—\$1.20 per ton for loads less than 10,000 lbs.

By dray across the river—\$1.80 per ton with minimum charge of 27 cents per package.

By car—On east side of river (about) 75 cents per ton.

By car—Across river (about) \$1.00 per ton.

The average labor cost of handling l. c. l. freight through the freight houses is 50 cents per ton.

Using the above cost figures, the total cost of handling l. c. l. connecting line freight dur-

TABLE XXIX—TABLE SHOWING TONS OF L. C. L. FREIGHT MOVED BETWEEN RAILROAD FREIGHT HOUSES ST. LOUIS-EAST ST. LOUIS RAILROAD TERMINALS DURING WEEK OF OCTOBER 18-23, 1920.

East Side to West Side by Dray.....	3,518.5	
West Side to East Side by Dray.....	760.9	
Total tonnage crossing river by Dray.....		4,279.4
East Side to East Side by Dray.....	469.7	
West Side to West Side by Dray.....	526.9	
Total		996.6
Total by Dray.....		5,276.0
East Side to West Side by Car.....	1,089.7	
West Side to East Side by Car.....	271.3	
Total tonnage crossing river by Car.....		1,361.0
East Side to East Side by Car.....	24.2	
West Side to West Side by Car.....	305.7	
Total		329.9
Total by Car.....		1,690.9
Total tonnage by Dray and Car.....		6,966.9

A relatively small amount of freight handled by dray crosses the river on ferry boats. The great bulk of this freight (all of it when the ferry boats are out of service for any reason) is handled by drays over the Eads Bridge and through the intersection of Third street and Washington avenue, St. Louis, a very busy point.

Some of the railroads that transfer their connecting line l. c. l. freight across this district by car prefer to transfer all by dray and would do so but at times the dray transfer service is inadequate and cars are resorted to at such times.

This connecting line l. c. l. freight costs just as much to handle in the freight houses as local l. c. l. freight and in addition its handling between houses costs as follows:

By dray—on either side of river 80 cents per

ing the week October, 18-23, 1920, was as follows:

6967 tons through inbound houses, at 50c	\$ 3484.00
6967 tons through outbound houses, at 50c	3483.00
997 tons on both sides by dray, at \$1.00	997.00
4279 tons across river by dray, at \$1.80	7702.00
24 tons on east side by car at 75c	18.00
306 tons on west side by car, at 75c	229.00
1361 tons across river by car, at \$1.00	1361.00
Total for one week.....	\$17274.00

To this should be added the per diem on cars which may be taken at \$1.00 per car per day.

690 tons would require 200 cars in service an average of 3 days; total \$600 per diem for one week.

Total cost of handling l. c. l. connecting line freight for one week, \$17,874.

Average total cost.....\$2.56 per ton

Total cost per one year.....\$929,448.00

A central clearing or transfer house has been suggested for the transfer of this freight. The operation of such a house would require that the present practice of loading local and connecting line freight in the same cars be discontinued or the cost of the transfer would be greater than at present.

For such l. c. l. freight as could be loaded in separate cars direct to and from the transfer house the following operations and costs would be involved between the interchange tracks of the connecting lines:

	Per Ton
Switching from arriving road to transfer house	\$0.75
Handling at transfer house.....	.60
Switching from transfer house to departing road .....	.75
Car rental one day each movement.....	.25
Total cost per ton.....	\$2.35

For inbound and outbound l. c. l. freight handled in the same cars as local freight the following operations and costs would be involved:

	Per Ton
Unloading and consolidating in cars for transfer house	\$0.50
Switching from freight house to interchange tracks .....	.25
Switching to transfer house.....	.75
Handling at transfer house.....	.60
Switching from transfer house.....	.75
Setting at freight house.....	.25
Unloading and consolidating with other freight .....	.50
Car rental one day each movement.....	.50
Total cost per ton.....	\$4.10

For freight switched across the river to and from the transfer house the cost would be about 50 cents greater; about \$2.85 and \$4.60 per ton, respectively.

As the connecting line freight comes from so many different directions and goes to so

many different points it would not be practicable to handle it all in cars separate from the local freight. Especially on outbound shipments there would be a great advantage in consolidating it with local freight as at present, as that practice improves car loadings and makes it possible to load cars for more stations than would be possible if separate cars were made up at the transfer station and at the local freight station.

In any event, the cost would be somewhere between \$2.35 per ton and \$4.60 per ton, with a tendency to be nearer the higher figure than the lower. Therefore, it is apparent that, even if the fixed charges of the proposed transfer station be ignored, such a central transfer system would cost more than the present system for handling l. c. l. connecting line freight by drays and trap cars, and it would take considerably longer.

This connecting line l. c. l. freight could be transferred at much less cost by platforms, trucks and trailers directly between freight houses by means of elevators and overhead or underground runways, as at Cupples Station, provided the principal freight houses of all lines could be grouped in one location where they could be connected. Such a layout is possible in North St. Louis, explained elsewhere.

The freight could be handled in that way for very little more than the cost of operating a central transfer station, the excess cost consisting merely of the lift and drop in the elevator and the extra distance, an excess cost of 25 cents per ton. Thus the total labor cost would be 75 cents per ton, \$5,225 for the week under consideration and \$271,700.00 for the year on that basis, a saving of \$657,748.00 as compared with the present system.

This saving would be partly offset by the extra cost to which those roads now handling l. c. l. connecting line freight elsewhere than in North St. Louis would be put in having their freight handled to and from the central location in North St. Louis. This extra cost may be taken at the present average switching rate of 75 cents per ton in St. Louis and \$1.00 per ton for crossing the river.

TABLE XXX—STATEMENT SHOWING TONS OF L. C. L. FREIGHT INTERCHANGED BETWEEN ROADS BY DRAY AND CAR FOR THE WEEK OF OCTOBER 18 to 23, 1920, INCLUSIVE.

TO FROM		B. & O.		C. & A.		C. B. & O. East		C. C. C. St. L.		C. P. St. L.		I. C.		L. & N.		M. & O.		Penn.		Sou.		T. St. L. W.		Wab. East		Sub Total From Each Road to All East Side Roads		C. B. & O. West		C. & E. I.		C. R. I. & P.		I. T. S.		M., K. & T.		Mo. Pac. 7th St.		Mo. Pac. Grat. St.		St. L.-S. F. 7th St.		St. L. S. W.		Wab. West		Sub Total From Each Road to All West Side Roads		Grand Total From Each Road to All Others		
		Dray	Car	Dray	Car	Dray	Car	Dray	Car	Dray	Car	Dray	Car	Dray	Car	Dray	Car	Dray	Car	Dray	Car	Dray	Car	Dray	Car	Dray	Car	Dray	Car	Dray	Car	Dray	Car	Dray	Car	Dray	Car	Dray	Car	Dray	Car	Dray	Car	Dray	Car	Dray	Car	Dray	Car			
B. & O.					4.9						0.9		14.3		0.1		6.3		0.5		0.7						27.7		79.2				53.6				113.5		202.7		59.8		67.5		37.8		18.9		633.0		660.7	
C. & A.		2.4										12.0	5.0	9.2		32.8		2.4		4.6		0.7				64.1	5.0		0.5		1.7				13.1		20.1		43.3	73.0	24.0		16.2	20.0	0.9		120.0	93.0	184.1	98.0		
C. B. & O. (East)				2.4								3.4		0.6		6.3		0.4		4.5				0.8		18.1		3.2						0.3		7.1		6.0		3.5		3.5				23.6		41.7				
C. C. C. St. L.		1.7		17.0								38.0		2.5		6.5		0.3		2.5		1.9				70.4		47.5				45.1				200.9	0.2	33.5	147.3	119.8		148.0		114.9		16.3		726.0	147.5	796.4	147.5	
C. P. St. L.				1.4				0.3				1.7		0.6		2.0	4.0	1.3		2.2		0.2				9.7	4.0		0.5		5.4				6.7		9.7		14.1		9.8		8.7		0.2		55.1		64.8	4.0		
I. C.		6.4		7.1				1.6						4.8		2.4		0.1		0.6		0.5		0.7		24.2		37.8			0.6			4.0		4.9		84.0		52.0		40.4		7.1		252.6		276.8				
L. & N.		3.5		14.8				4.0		3.8		6.2				0.6		10.3				5.5		13.8		62.5		58.6				10.0				17.5		31.9		7.1		8.9		1.7		19.2		155.3		217.8		
M. & O.		0.2		15.8		0.6	2.2			3.4		14.2	6.1	0.3				3.4		0.5		0.2		7.2	0.7	45.8	9.0		0.6	11.5				1.2				2.8		0.1	29.0		0.6	30.0		5.3	70.5	51.1	79.5			
Pennsylvania		0.7		9.7								4.5		3.0		8.6				0.7						27.2		36.4	0.9			56.0				149.5	104.8	135.0	129.8	108.4	21.5	119.4	16.6	66.5	2.4	7.2		678.4	276.0	705.6	276.0	
Sou.		4.4		4.8				3.0		18.2		0.6		0.2		7.3		1.6						12.2		52.3		92.2	1.4	0.1		34.5				32.1		124.7	8.0	12.9		27.0	11.5	20.0		30.0		373.6	20.9	425.9	20.9	
T. St. L. W.		3.0		19.5								5.3		2.2		0.7				2.7						33.4		4.0				5.7				91.0	3.4	57.1	7.0	27.0		57.9		14.8		1.1		258.6	10.4	292.0	10.4	
Wab. (East)		0.2		0.7		0.2						4.0	0.2	1.6		13.2				14.4	6.0					34.3	6.2	6.7				3.9		0.1		44.5	18.5	36.3	149.6	38.5	48.5	76.8	0.7	27.3	44.6	2.9	82.2		237.0	471.4	271.3	477.6
Sub Total from All East Side Roads to Each Road		22.5		98.1		0.8	2.2	8.9		26.3		103.9	11.3	25.1		86.7	4.0	20.3		33.4	6.0	9.0		34.7	0.7	469.7	24.2	367.2	13.8	0.9		221.1		0.7		690.8	126.9	665.8	441.7	520.9	143.0	594.9	57.8	351.8	67.0	104.4	239.5	3518.5	1089.7	3988.2	1113.9	
C. B. & O. (West)		4.4		0.9			2.0	15.6				40.0	0.2	34.5	0.3	20.7		9.8		30.0	0.6	1.4		0.4		157.7	3.1					1.2		0.3		28.0	14.9	14.4		44.0	1.2	37.0		10.3		2.3		137.5	16.1	295.2	19.2	
C. & E. I.				0.3												0.4				0.8						0.7		3.8	0.8					7.8		13.7		10.3	1.5	8.7	13.8		60.6	2.2	0.4		39.1	84.5	39.8	84.5		
C. R. I. P.		6.0		0.2				0.6		0.1		2.2		4.2		0.8		11.8		3.2		0.2		11.0		40.3		0.6				16.8								0.2		1.5	1.0		0.2		2.1	18.6	42.4	18.6		
I. T. S.														0.4												0.4						4.0				0.1		1.5		0.1		1.8				7.5		7.9				
M. K. & T.		19.3		5.5				36.8		0.2		8.2		3.0	5.3	0.1		24.7		1.2		1.2		29.5	4.5	129.7	9.8	3.4		2.2		2.6				5.0		0.2		3.5		0.1		4.5		21.5		151.2	9.8			
Mo. Pac. 7th St.		2.7	40.6	2.9			0.5	8.3	36.7			7.3	15.7	9.8	15.8	1.8		41.6		15.1	3.5	6.9		30.0	23.8	126.9	136.1	1.2		2.7		0.2	0.3		0.5		6.5	0.9	15.7	0.7		0.1	1.9	2.0		8.3	24.4	135.2	160.5			
Mo. Pac. Grat. St.		10.4	7.2	2.5	12.0	1.1				20.6	15.2	4.1	0.1	4.2	0.1			25.5	17.1	0.9		1.9		62.5	32.8	133.7	84.5	12.1		0.2	0.2			3.1		0.6		0.3	48.4	0.0	4.0	0.9	1.9		6.5		20.6	57.6	154.3	142.1		
St. L.-S. F. 7th St.		14.4	14.4	4.8		0.7		11.8		0.4		8.0	2.9	1.0		0.1		8.0	1.0	3.5		2.9				55.6	18.3	8.6		1.1	78.6	3.4	0.9		0.5		4.5				0.0	1.2	0.4		7.6	23.0	26.1	103.7	81.7	122.0		
St. L. S. W.		5.6		12.4				7.1		0.3		1.1		2.4				3.2		1.5		2.3		5.4		41.3		6.8						0.2		2.9		2.9		6.0				0.8		16.7		58.0				
Wab. (West)		5.0		1.2				4.3				17.7	1.3	18.4		3.7		7.3		15.6		0.2		0.9	18.2	74.3	19.5		28.4		0.3		15.8		29.8		36.2		18.7		31.5		13.0				173.7		248.0	19.5		
L. & N. Broadway				0.2								0.1															0.3					5.3				20.5		13.3	0.8	3.9		7.1		7.8		1.6		73.8	0.8	74.1	0.8	
Sub Total from All West Side Roads to Each Road		67.8	62.2	30.9	12.0	2.3	2.0	84.5	36.7	21.6	15.2	88.7	20.2	77.9	21.5	27.6		131.9	18.1	71.0	4.1	17.0		139.7	79.3	760.9	271.3	79.2	0.8	6.5	95.6	32.5	12.4	0.4		93.9	14.9	88.4	57.2	76.7	34.7	88.9	65.2	34.9	1.9	25.9	23.0	526.9	305.7	1287.8	577.5	
Grand Total from All Roads to Each Road		90.3	62.2	129.0	12.0	3.1	4.2	93.4	36.7	47.9	15.2	192.6	31.5	103.0	21.5	114.3	4.0	152.2	18.1	104.4	10.1	26.0		174.4	80.0	1230.6	295.5	146.4	14.6	7.4	95.6	253.6	12.4	1.1		784.7	141.8	754.2	498.9	597.4	177.7	683.4	123.0	386.7	68.9	130.3	262.5	1045.4	1395.4	5276.0	1690.9	

The total for one week would be as follows:

On west side, 3,630 tons @ 75c.....	\$ 2,722.00
Between east and west side, 6,628 tons @ \$1.00.....	6,628.00
Total for one week.....	\$ 9,350.00
Total for one year.....	\$486,200.00

freight at Chicago at \$2.61 per ton, and all expense of operating a clearing or transfer station at \$1.15 per ton, including switching, saving \$1.46 per ton. As costs have increased considerably, the estimate of possible savings on this item at St. Louis appears conservative.

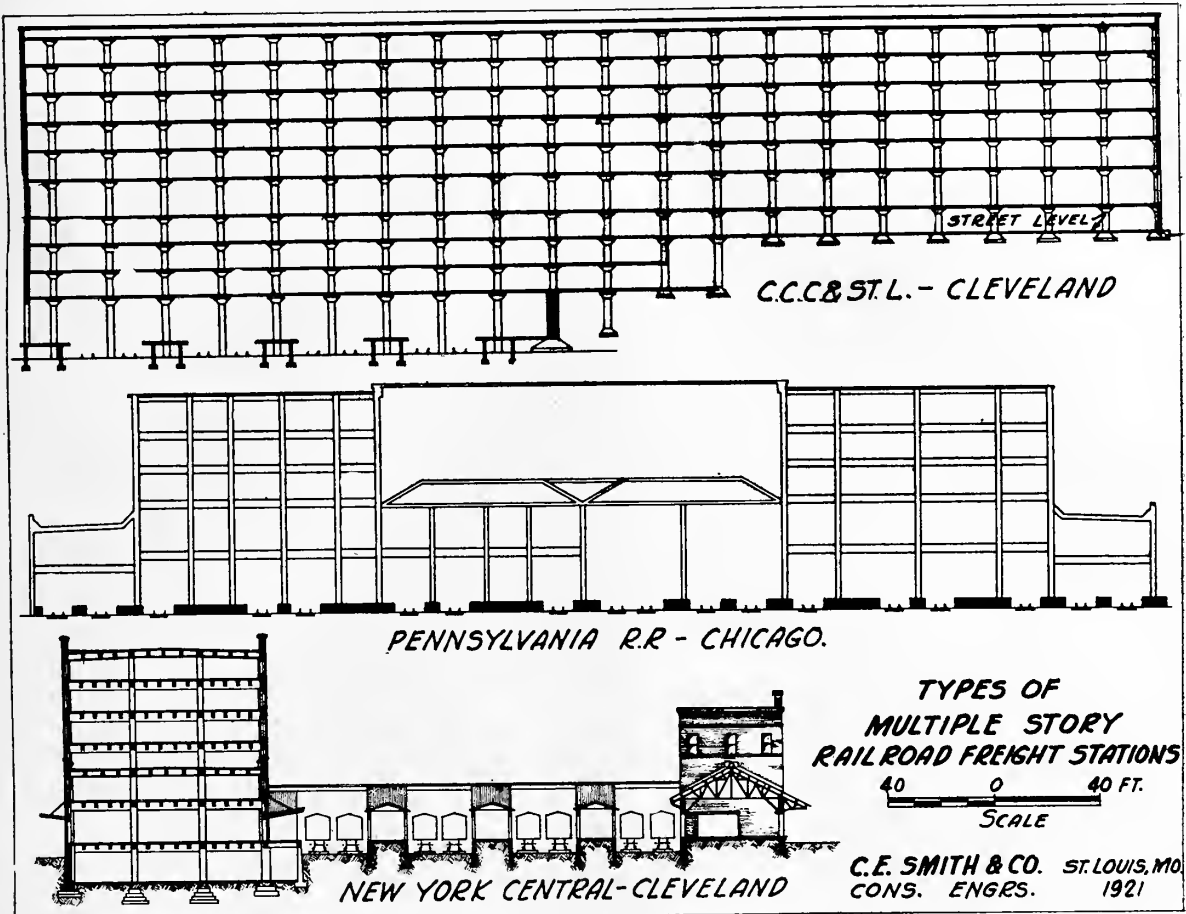


Fig. 104—Types of Multiple Story Freight Stations.

No additional per diem would be incurred, as the freight would be handled the same day, as under present system.

Deducting this extra cost from the saving of \$657,748.00 would indicate a net saving of \$171,548.00 to pay the return on the system of runways and elevators that would be required. This saving is in line with similar estimates made for Chicago. In 1915 E. H. Lee, Vice-President and Chief Engineer of the Belt Railway of Chicago, estimated the cost of the present system of handling l. c. l. connecting line

No account has been taken of the expense to the public in street maintenance, nor of the delay to other business caused by hauling this freight through the streets, nor can any amount be estimated to cover these items. However, they should not be ignored in the consideration of this subject.

Multiple Level Freight Houses and Warehouses

The remarkable success which the New York Central Railroad Company has had in

developing high buildings above its railroad property at the Grand Central Terminal at New York City, and the success of the Bush Terminal at Brooklyn, the Forty Warehouses at Pittsburgh, the Cupples Station at St. Louis, and of a number of multiple level freight

ican Railway Engineering Association, which made an intensive study of fifteen successful warehouses. Extracts from report of that Committee, published in 1922, are as follows:

"Some of the principal advantages of constructing warehouses in connection with l. c. l.

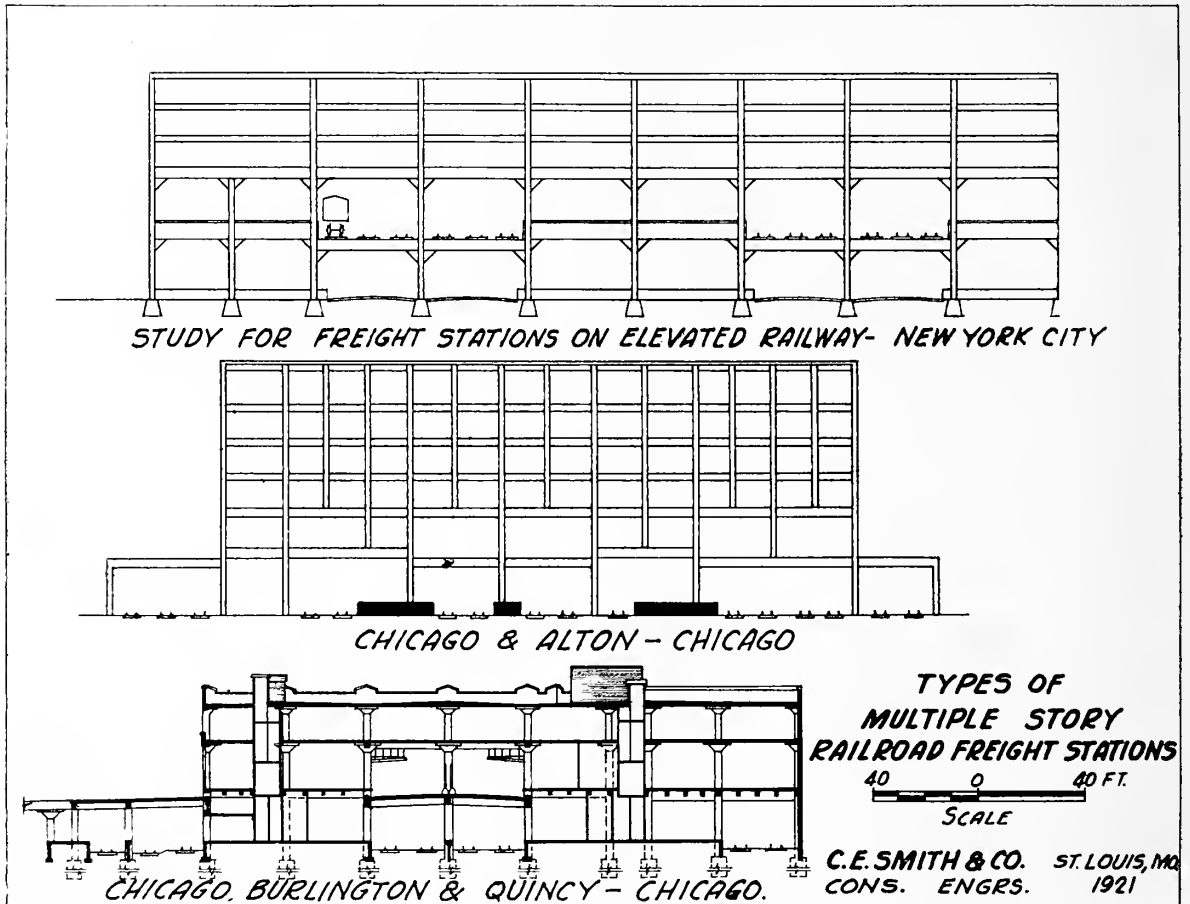


Fig. 105—Types of Multiple Story Freight Stations.

houses with warehouses above built by several railroads, such as the C. C. C. & St. L. at Cleveland and the C. & A., C. B. & Q. and Pennsylvania at Chicago, has directed the attention to the possibilities of such development.

At Los Angeles the United Terminal Company has built several units of a very large development of warehouses for produce and other commercial uses.

This subject was recently studied by the Yards and Terminals Committee of the Amer-

ican Railway Engineering Association, which made an intensive study of fifteen successful warehouses. Extracts from report of that Committee, published in 1922, are as follows:

1. The development of the air rights above the freight house for warehouse purposes creates an added source of revenue which helps reduce the charge for high land values which would otherwise be absorbed entirely by the freight house.

2. The warehouse, by being located on the railroad company's property, attracts traffic to the railroad which might otherwise be lost.

3. The occupant of the warehouse is saved the usual time and expense necessary to truck his goods between the warehouse and freight

station. In many locations, where streets are narrow and already congested with traffic, this elimination of trucking is desirable, both from the standpoint of the warehouse operator and the municipality.

"The extent and importance of these various advantages depend entirely upon local condi-

legally restricted from engaging in such activities.

3. A warehouse operated by a railroad company is governed by the regulation of the Interstate Commerce Commission, which is not the case with a privately operated warehouse company. This places the railroad company

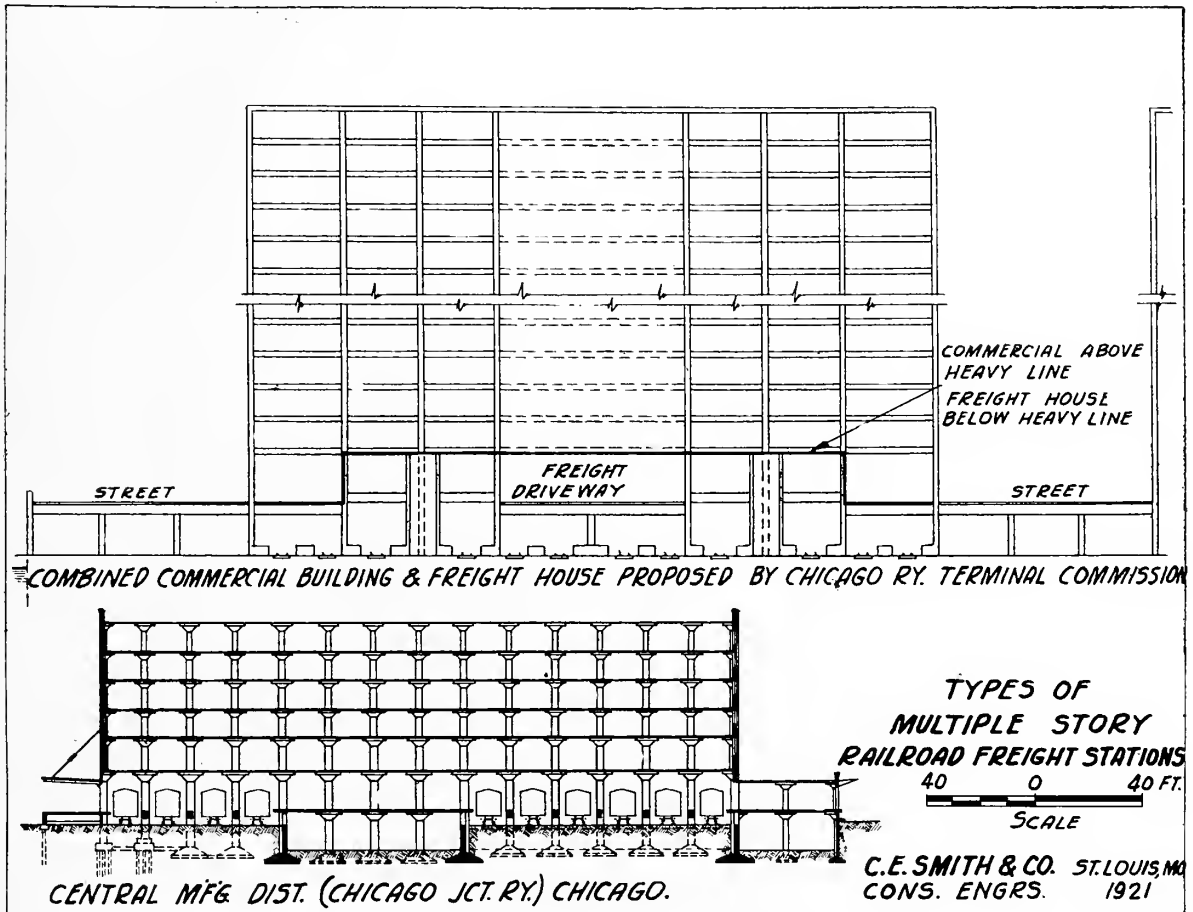


Fig. 106—Types of Multiple Story Freight Stations.

tions, and must be determined for each individual location. It might be mentioned in this connection that the operation of buildings above freight stations for light manufacturing and other purposes has proven successful.

"Some of the principal disadvantages of constructing warehouses in connection with l. c. l. freight houses may be expressed as follows:

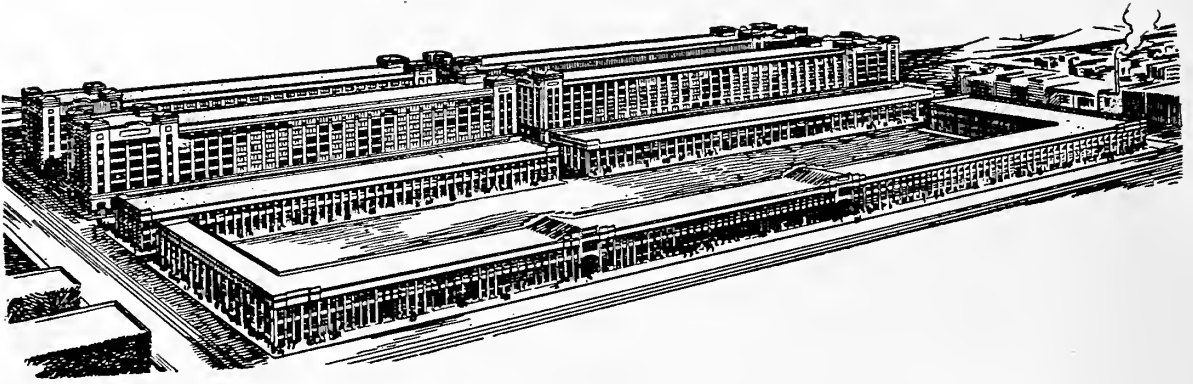
1. There might be created by this arrangement considerable interference between the employes and patrons of the warehouse and those of the freight station which would be objectionable.

2. Railroads are not organized to conduct a warehouse business, and some of them are

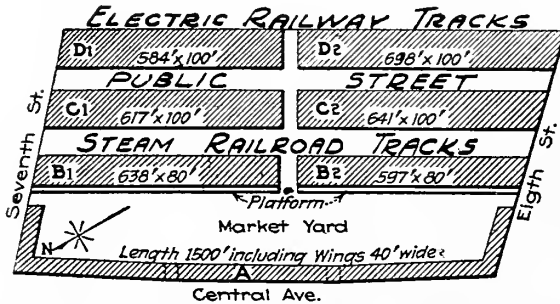
on an unfavorable competitive basis with the private company.

"In numerous cases the last two handicaps have been overcome by the railroad company by either organizing a subsidiary warehouse company to operate the property or leasing it for a period of years to an independent company.

"If a warehouse is to be most successfully operated in connection with an l. c. l. freight house, particularly if the latter is of some magnitude, it is desirable to eliminate interference between employes and patrons of the two facilities. It is, therefore, desirable in so far as possible, without a too great duplication, to



**WAREHOUSE GROUP AND PRODUCE TERMINAL
OF
LOS ANGELES UNION TERMINAL COMPANY
UNION TERMINAL WAREHOUSE COMPANY.**



PLAN OF BUILDINGS SHOWN IN ABOVE PERSPECTIVE

ALL BUILDINGS COMPLETED AND
IN OPERATION, EXCEPT D2.
2,000,000 SQ. FT. FLOOR AREA.

(Illustrations from
Engineering News-Record
Jan. 24, 1918.)

Fig. 107—Warehouse Group—Los Angeles, California.

provide separate and independent facilities for each. This applies particularly to tailboard space, railroad trackage, shipping platforms space and elevator service. Adequate facilities should be provided for the warehouse without interfering with the freight house operation.

Summary:

"Summarizing the foregoing report as to the suggested relation between the various factors

of design, we have the following which are suggested for warehouses where the turnover of goods is moderately rapid.

1. One elevator should be provided for each forty thousand square feet of warehouse space served.
2. The shipping platform area should be four per cent of warehouse storage floor area.
3. There should be one car length of track



Fig. 108—M. K. & T. Freight Station, North St. Louis.

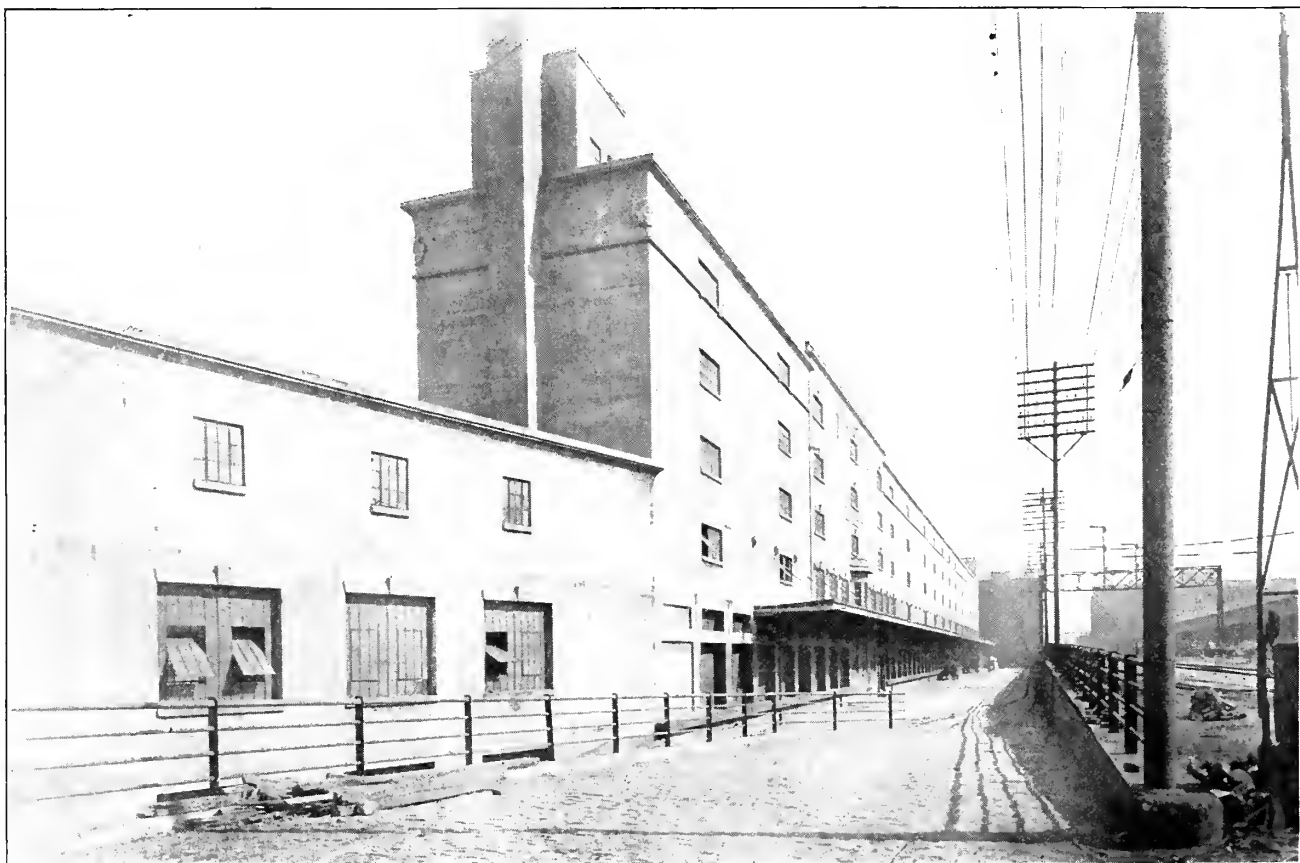


Fig. 109—St. L. S. W. Freight Station, North St. Louis.

siding for each 17,600 square feet of warehouse storage area.

4. There should be one foot of tailboard frontage for every 1,100 square feet of warehouse storage area.

5. There should be 16 feet of tailboard frontage for each car length of siding.

"The above figures do not represent exact limits of design, but are indicative of the proper relation that should exist based on experience of the warehouses studied in this report."

The success of the Cupples Station of St. Louis indicates that shippers will pay more rent for space in such a building than in buildings not supplied with similar railroad service. This is easy to understand, as the shippers save the cost of trucking their goods through the streets to and from the railroad freight stations, and substitute for that the handling by platform trucks and elevators.

There is no reason to suppose that warehouses built above l. c. l. freight stations of individual railroads would not be just as attractive, provided the tenants of the upper floors were given impartial, universal service to and from all railroads.

If all the railroads had freight houses in one location, as previously mentioned, in North St. Louis, connected by runways, the tenants in the upper floors would have access to all railroads without the necessity of trucking through the streets and without the necessity of any railroads loading trap cars to other railroads.

The development of air rights above l. c. l. freight stations for commercial purposes will be a benefit to shippers by affording them economical locations, to the community indirectly by attracting to the city shippers desiring such locations and directly by reducing the trucking that would otherwise be done in the streets, and to the railroads by providing a source of income which may reasonably be expected to lift the fixed charges and overhead from their l. c. l. freight stations below.

The reconstruction of the railroad freight stations in North St. Louis and in Mill Creek Valley, as multiple storage stations, should be given careful consideration.

Platform Trucks in Freight Houses

Many of the railroads are still using two-wheel hand trucks at their freight stations, although many have changed to four-wheel hand trucks. There are no mechanical tractors in use here, except at Cupples Station and C. B. & Q. freight house.

The two-wheel hand truck has for a long time been recognized as uneconomical, and is being superseded by four-wheel hand trucks, which in ordinary freight-house work, except where runways are narrow and distances very short, show considerable saving as compared with two-wheel trucks.

Where the volume of freight is great and distance long, and the platforms are wide enough, mechanical tractors and trailers will show further economy.

Under conditions favorable to the three types of trucks mentioned experience has shown the relative cost of handling l. c. l. freight by those methods to be about as follows:

Two-wheel hand trucks.....	100 per cent
Four-wheel hand trucks.....	60 per cent
Tractors and trailers.....	15 per cent

The Committee recommends that greater use be made of the four-wheel trucks in preference to the two-wheel truck and that motor tractors be installed wherever economy can be effected by their use.

This subject was carefully investigated by E. H. Lee, Vice-President and Chief Engineer of the Chicago and Western Indiana, in 1914. His conclusions are published in Bulletin 171 of the American Railway Engineering Association, as follows:

"Conclusions regarding the use of trucks of the various types are as follows:

(1) Motor trucks, when used without trailers, tend to decrease the cost of trucking freight, because they form single units of higher capacity and greater speed than do men with two-wheel trucks; but as their cost of operation (per day) is greater than the cost of a man and a two-wheel truck, the saving is not large, and unless conditions are favorable (long hauls, heavy packages, etc), no saving is made. When compared with a man and a four-wheel truck, there is no saving, for the two

have about the same carrying capacity, and the higher speed of the motor is more than offset by its greater cost of operation.

(2) Motor trucks, when used as power for hauling loaded four-wheel trucks as trailers, show favorable results and greatly decrease the costs per ton. They can pull six times the load at twice the speed of a man with a four-wheel truck, at about twice the expense. Motor trucks should therefore be used to haul and not to carry freight. Under such a system they form an efficient, reliable and economical means of trucking freight.

(3) To insure full trainloads, an ample supply of four-wheel or six-wheel trucks and dollies is necessary.

(4) Motor trucks, when used as tractors, can handle practically all kinds of l. c. l. freight.

(5) Motor trucks need wide station platforms and open runways wide enough to permit two motor truck trains to pass each other in order to secure the best results.

(6) "Fouling points" or "interferences" should be reduced or eliminated entirely.

(7) In motor truck operation distance is a relatively unimportant factor, for once a train is made up and in motion the cost per ton per 100 feet is low.

(8) Under fair conditions, on an ordinary freight platform, where the motor must operate largely as a way freight, it can handle from 150 to 200 tons per day per motor, and do from 10 to 15 ton-miles of trucking.

(9) Under local conditions, where the motor can operate as a "through freight," i. e., pull a solid train of five or more trailers from origin to destination without a stop and with few or no delays, a motor can probably be expected to handle from 250 to 500 tons per day or do from 30 to 60 ton-miles of trucking.

(10) Finally, the substitution of the four-wheel truck for the two-wheel truck, if conditions warrant, while it saves money, is particularly valuable because it may be a preliminary step to the use of one or more motor trucks, if volume of tonnage and local conditions indicate the need of a tractor. This method of procedure also eliminates the danger of installing motor trucks at a heavy investment expense, to perform work which the four-wheel truck used as a trailer will do more economically."

Method for Handling to and From Railroad Stations

Motor Trucks

The development of the motor truck for hauling freight through city streets has caused much study of the extent to which it may be

used economically as an adjunct to railroad service. As the motor truck can handle freight faster and at less cost on long haul than horse-drawn vehicles, it is peculiarly adapted to such service.

The motor makes possible the consideration of district off-track freight stations as centers for store-door collection and delivery, freight containers, elimination of trap cars, and prompter service, even to those industries that have track connection.

A short resume is given here of recent developments in the use of motor trucks for handling freight in large cities.

Demountable Truck Bodies

Demountable truck bodies are used at Cincinnati for handling connecting line l. c. l. freight between railroads and between main and sub-freight stations. The bodies are closed boxes eight feet wide, seventeen feet six inches long, seven feet high, with doors at the rear. They are handled by overhead cranes. The trucks have a capacity of five tons.

The bodies are placed on level with the freight house floors. The freight is handled directly between them and the cars. The boxes are loaded at the inbound houses, locked and sealed, and hauled to the outbound houses of the other railroads. After being emptied at the outbound house they are moved around to the inbound house for another load.

The containers are used locally; they are not handled on railroad cars. While the bodies are being loaded and unloaded the motor trucks are handling other bodies.

When this system was installed in 1917 the freight was handled in part by horse-drawn drays; their capacity had been outgrown by the business and the railroads were rapidly returning to the expensive, slow and unsatisfactory trap-car service. The new system showed immediate benefits in quicker interchange, released trap cars for other service, released platform space, reduced platform labor, reduced the cost of transfer to the railroads, reduced loss and damage claims and released track room for station cars.

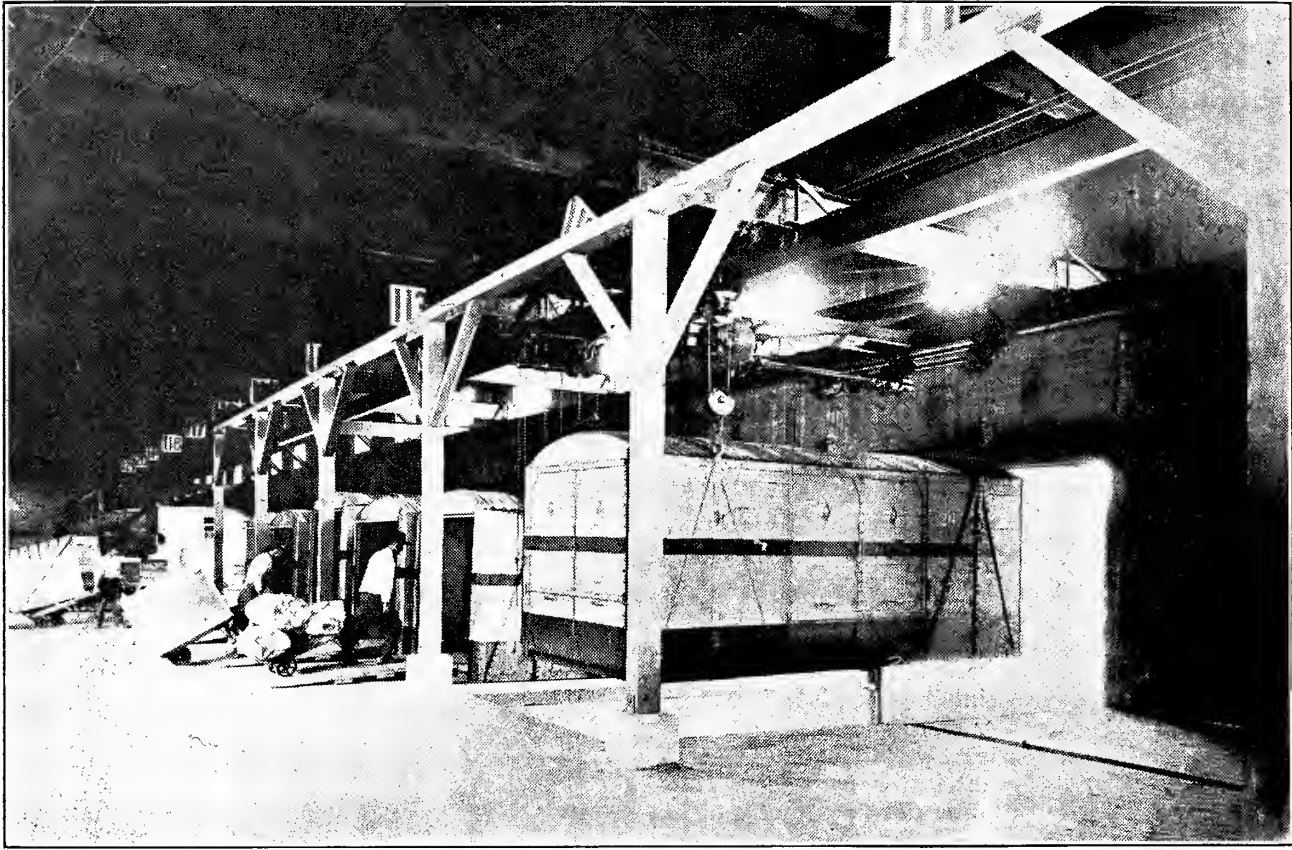


Fig. 110—Demountable Motor Truck Bodies—Cincinnati, Ohio—Loading Bodies.

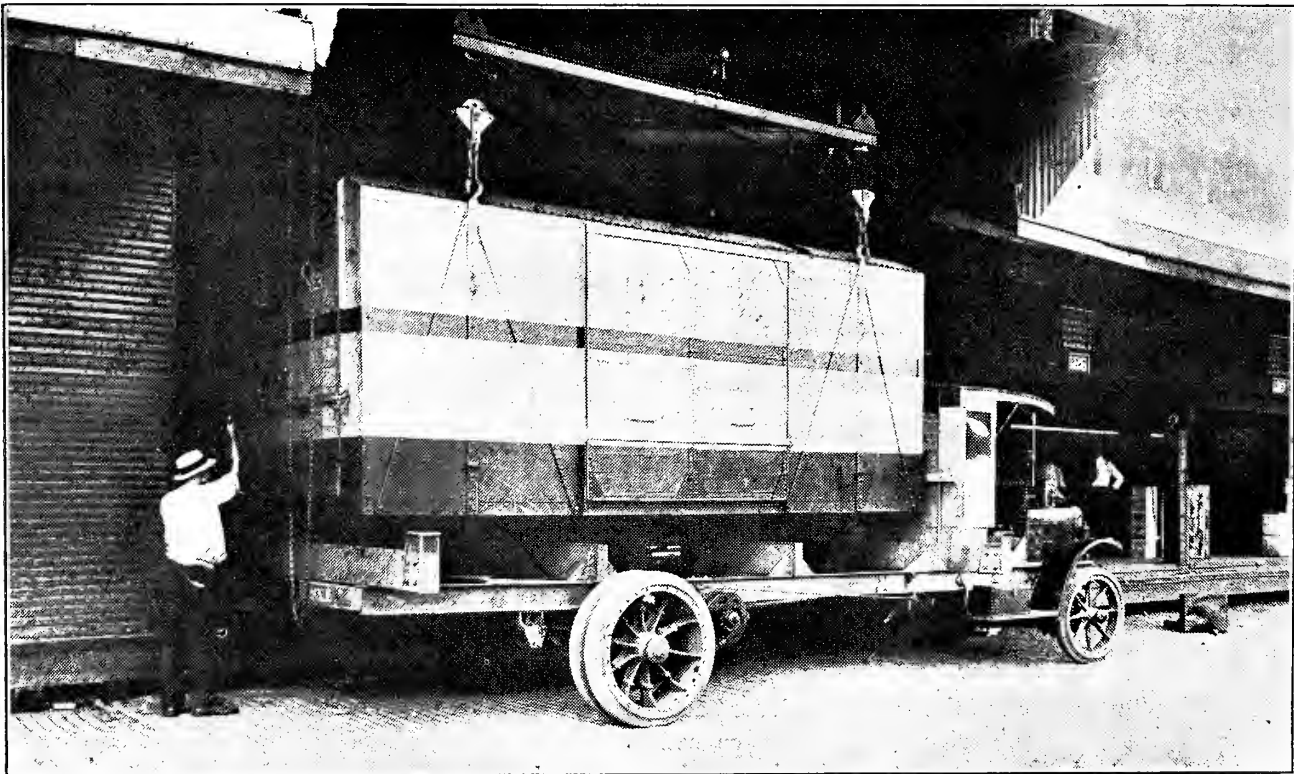


Fig. 111—Demountable Motor Truck Bodies—Cincinnati, Ohio—Placing Body on Motor Truck.



Fig. 112—New York Central Container Car—Ready for Shipping.

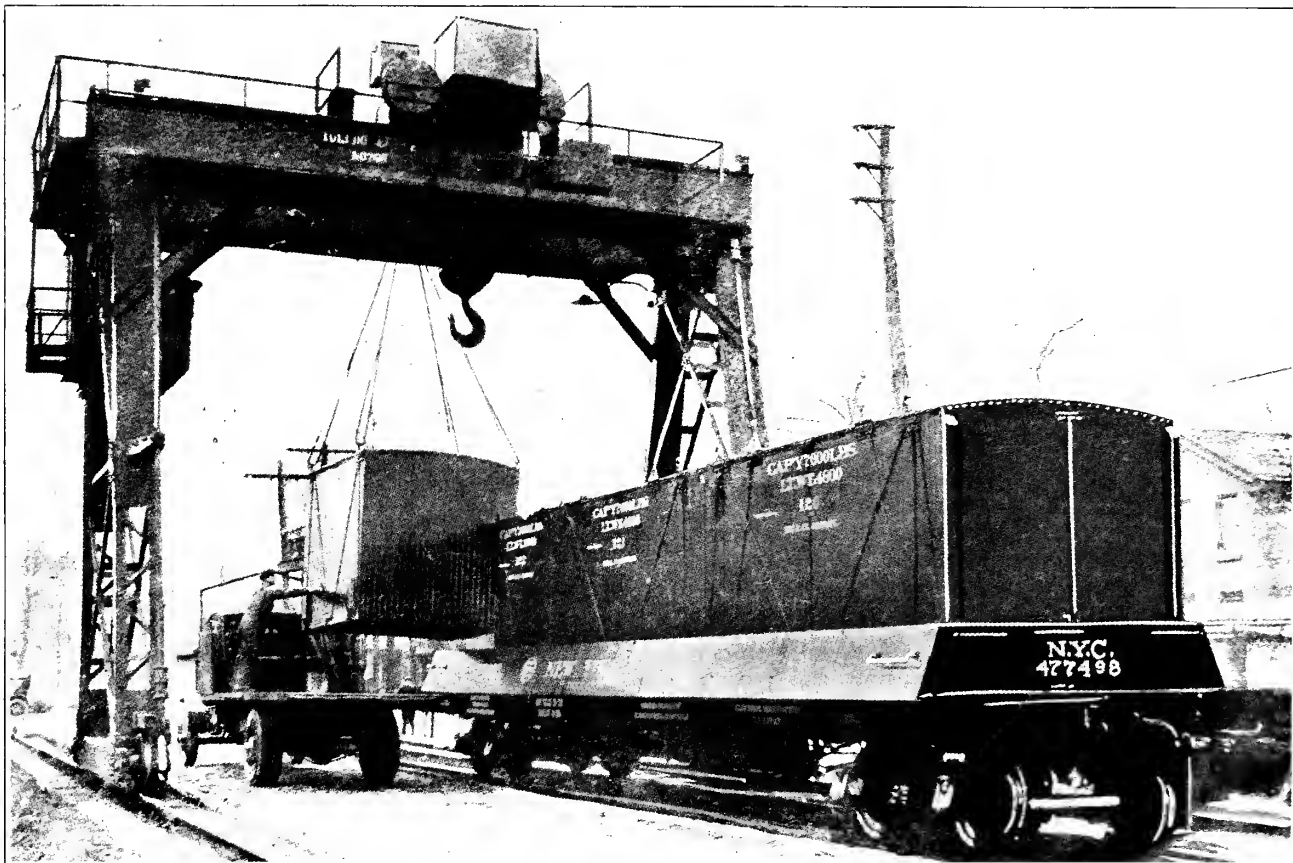


Fig. 113—New York Central Container Car—Placing Container on Motor Truck.

Container System

The New York Central Railroad is conducting an experiment with far-reaching possibilities in the shipment of freight in steel containers. The system is not necessarily confined to l. c. l. freight, but may be used for certain freight that would otherwise be shipped in carloads. It is also adapted to the handling of express and mail.

The freight containers are of two sizes—7 feet wide, weight 2,900 pounds, capacity 3,500 pounds, and 14 feet wide, weight 4,800 pounds, capacity 7,000 pounds. Especially designed flat car with low sides carries six small or three large containers. When the containers are on the car the doors cannot be opened. Any flat car may be readily adapted to handling containers.

Containers may be loaded and locked on the shipping platform of the shipper, transferred to a motor truck, moved to a railroad siding, transferred to a car, transported to destination, transferred to a motor truck, moved to the consignee, transferred to the consignee's platform and there unlocked and unloaded.

This system reduces the number of handlings of freight, eliminates repeated checking, reduces the number and cost of clerks and truckers, practically eliminates losses due to theft and handling. Goods may be carefully packed by the shipper, frequently without crating, with the assurance that they will not be disturbed until delivered.

This system is admirably adapted to store-door collection and delivery for the large shippers who make shipments that will fill containers. The extensive use of this system should cut down delays to trucks at freight houses and relieve freight houses of a great part of their present burdens. Cars and trucks can be loaded and unloaded in a fraction of the time now consumed in handling l. c. l. freight.

Experimental trips have been made between New York and Chicago and between Cleveland and Chicago. In a shipment of groceries from a Chicago firm to its Cleveland house 198 pieces were loaded in thirty-three minutes. The container was transferred to the car in

five minutes. Nothing was crated. The goods were received in Cleveland in good condition.

This service cannot be substituted for the present method of handling l. c. l. freight, as there are so many small shippers, but it may be made an important adjunct.

This system should be given careful consideration by railroads and large shippers. It may be used to advantage by many shippers who have their own railroad track.

Columbia Terminals Tractor and Trailer System of Freight Handling at St. Louis and East St. Louis

The l. c. l. freight that is handled between freight stations in the St. Louis-East St. Louis terminals and between the railroad freight stations and the off-track stations of the transfer companies is handled in wagon bodies with side stakes and a ridge pole. Each body carries a tarpaulin which is spread in wet weather. The greatest distance between stations is two miles.

Closed bodies were not adopted, as in Cincinnati, on account of the extra dead weight and the heat in summer. Movement under lock and key has not been considered necessary in St. Louis, as there has been practically no theft. The transfer companies' employees check the loading of the drays, receipt for the freight and get a receipt at the other end. This differs from the Cincinnati system, where the transfer companies' employees are merely drivers.

The St. Louis stake wagons are hauled by horses and as trailers to tractors. The wagons and trailers are parked at inbound platforms for loading and at outbound platforms for unloading while the horses and tractors are handling loads. The equipment is controlled by a dispatcher. The horses are gradually being replaced by tractors. At present the tractors haul across the river; the horses handle the shorter hauls on both sides of the river.

It is interesting to note that the motor tractors take only 18 minutes to make trips that take horses one hour.

The St. Louis system has all the advantages of the Cincinnati system, except the movement

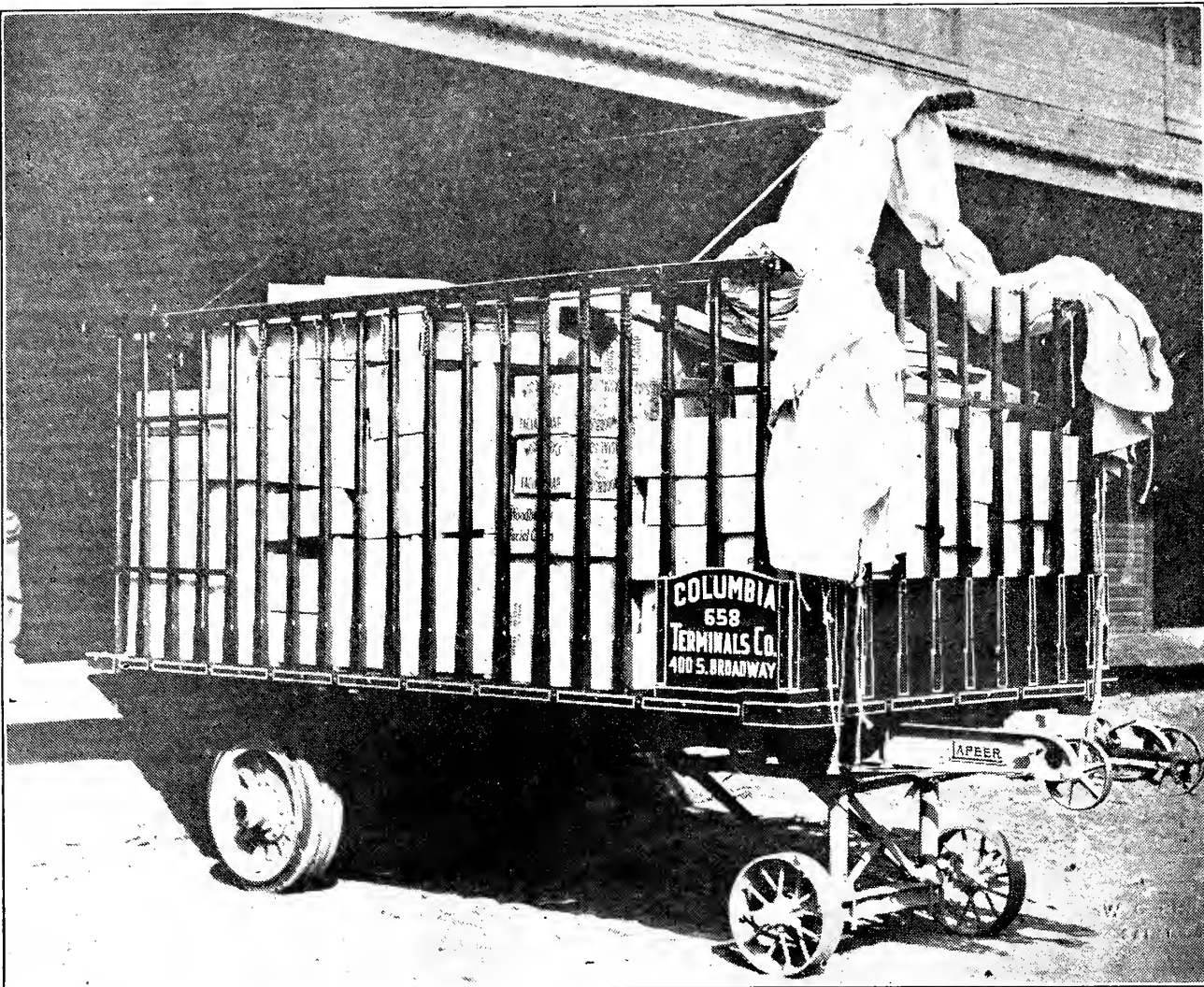


Fig. 114—Tractor and Traylor Method, Columbia Terminals Co.—Loading Trailer.

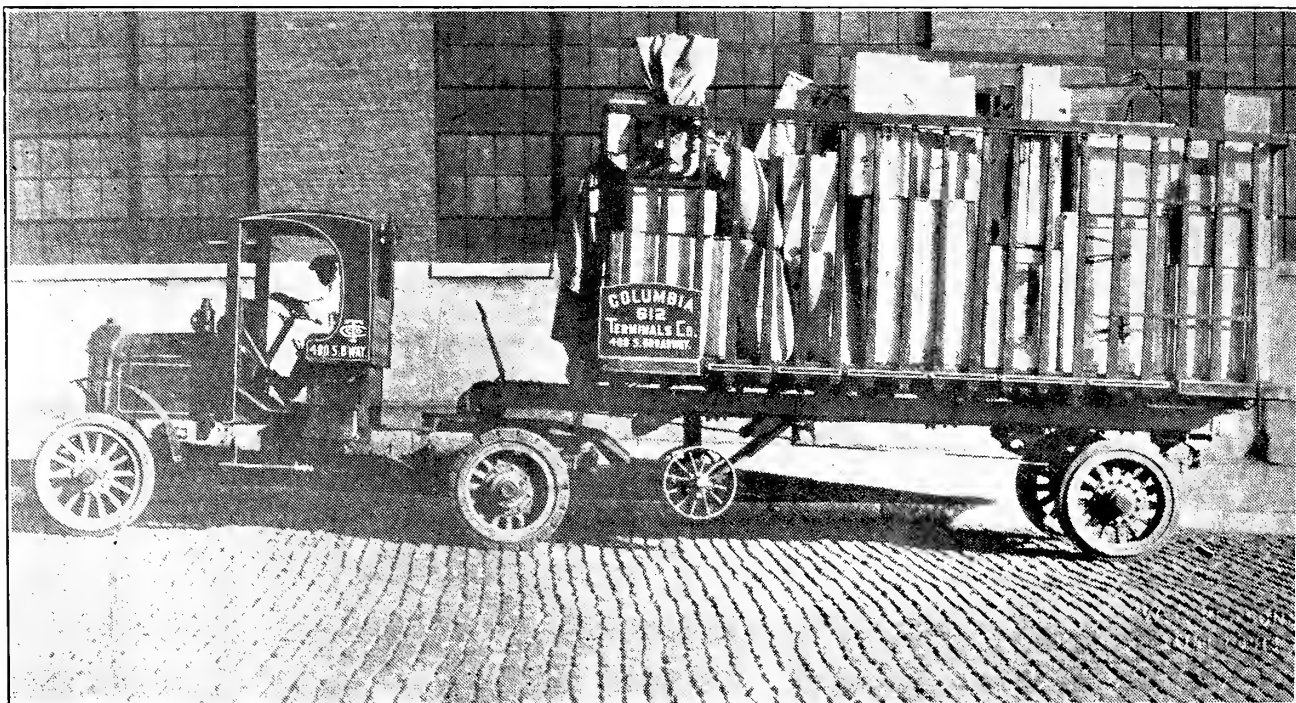


Fig. 115—Tractor and Traylor Method, Columbia Terminals Co.—Ready for Delivery.

under lock and key, and is more flexible, as the wagons can handle at any point on the platforms of the shippers or freight houses without special preparation, other wagons may use the same space at other times, and no overhead cranes or mechanical equipment is required as for the Cincinnati bodies and the New York Central containers.

The trailers run on a rear axle and two heavy truck wheels. The front end, when detached from the trailer, is supported on a hinged frame with two small wheels under the body which permits the trailer to be moved around even when detached.

The front end of the trailer is picked up automatically and carried over the rear driving wheels of the tractor, which has four wheels. Thus a tractor and trailer have six wheels, two steering wheels, two driving wheels and two trailing wheels. The trailers have a capacity of 9 tons; the tractors are $3\frac{1}{2}$ tons. The tractors average 20 miles per day with an average load of 6 tons.

This service has been developed to a high degree of efficiency, and is very popular with the railroads and the shippers.

Motor Trucks, Trailers and Containers Abroad

Motor trucks, tractor trailer and container systems are in use by several European railways, largely for store-door delivery service, which is common in Europe.

The English railways have used railway containers for some years, particularly in handling mail, baggage and express to and from steamers to France and Ireland.

Bibliography of Motor Truck, Trailer and Container System of Freight Handling

As so much attention is being given to this subject it is considered desirable to reprint here a bibliography on the subject prepared by the Yards and Terminals Committee of the American Railway Engineering Association, which appears in the 1922 report of that Committee.

Motor Trucks for l. c. l. Freight Service at Cincinnati.—Engineering News Record, March 11, 1920; pp. 495-508.

Motor Truck Service for l. c. l. Transfer and

Store Door Delivery.—Engineering News Record, October 21, 1920; p. 785.

Motor Trucks in Terminal Service.—Engineering News-Record, December 16, 1920; pp. 1163, 1194.

Container System for Freight Transportation on the New York Central Railroad.—Engineering News-Record, March 31, 1921; p. 557.

Tractor-Trailer Service for l. c. l. Freight Transfer at St. Louis.—Engineering News-Record, May 19, 1921; p. 852.

Motor Truck Freight Transfer by European Railways.—Engineering News-Record, June 2, 1921; p. 954.

Tractor-Trailer Freight Service at Chicago.—Electric Railway Journal, July 23, 1921; p. 133.

Motor Trucks Replace Trap Cars.—Railway Age, Sept. 7, 1917; p. 427.

Expediting Movement of l. c. l. Freight at Cincinnati.—Railway Age, August 6, 1920; p. 219.

Container System of Freight Transportation.—Railway Age, September 24, 1920; p. 151.

Unit Containers for Freight Shipments.—Railway Age, October 22, 1920; p. 684.

Container Car in Express Service on New York Central Railroad.—Railway Age, February 4, 1921; p. 315.

Proposed Container System at New York.—Railway Age, February 25, 1921; p. 474.

Container Car for l. c. l. Service on N. Y. C. R. R.—Railway Age, April 8, 1921; p. 905.

Container Car in Mail Service.—Railway Age, May 13, 1921; p. 1128.

Standard Freight Container as Auto Truck Body.—Railway Review, June 12, 1920; p. 1015.

Steel Containers Handle Express on New York Central Railroad.—Railway Review, February 5, 1921; p. 214; and April 16, 1921; p. 600.

Expediting Mail Service.—Railway Review, May 28, 1921; p. 811.

The Container System on British Railways.—Railway Review, September 10, 1921; p. 328.

Tractor Method of Handling l. c. l. Freight and Using Demountable Van Bodies for Handling Freight.—Proceedings of Freight Station Section, A. R. A., 1921.

Container System of Handling Freight on Interurban Electric Railway Between Cincinnati, Ohio, and Aurora and Harrison, Indiana.—Railway Age, February 25, 1922.

GRADE CROSSINGS

Railroad Grade Crossings

There are many railroad grade crossings in the St. Louis-East St. Louis railroad terminals. At many of these crossings there are also connections where freight is interchanged. So long as the present system of competition in railroading continues many of these railroad crossings will be necessary. Most of the connections will also be required for free circulation of cars in interchange between railroads, and as the connections must be at grade most of the crossings will be continued at grade.

Wherever it appears that railroad crossings can be separated and that in time conditions will require their separation, no permanent improvements should be made that would prevent the separation at some time in future.

Wherever railroad crossings are not needed they should be eliminated. The plan recommended by the Committee for the use of outer group yards, and for the separation of passenger trains from the freight tracks on the surface in East St. Louis, automatically eliminates the handling of a great deal of traffic across other railroads.

Northeast of Bridge Junction, where the Wabash crosses the C. P. & St. L., T. St. L. & W., and the Southern in reaching the Stock Yards, and where the C. P. & St. L. and T. St. L. & W. also reach the Stock Yards, a complicated junction is made which can be done away with entirely by the use of outer yards. The Stock Yards business of those railroads can be handled in and out at its extreme east end and over the Illinois Transfer Railway and the V. & C. belt of the Southern Railway.

In the vicinity of Bridge Junction and Relay Depot in a distance of one mile there are twenty-five railroad grade crossings that cause considerable delays in the handling of freight. These are due to the location of the freight houses and termini of the railroads along the

river front in a different order than that in which the railroads enter the city. For example, the B. & O. enters from the east, south of the Pennsylvania, but its freight house and terminal is north of the Pennsylvania. Hence there is a crossing of those two roads near Relay Depot.

The C. C. C. & St. L. enters from the north, but its freight house is the farthest south of all the north and east lines, necessitating crossing over the C. P. & St. L., T. St. L. & W., Wabash, C. B. & Q., B. & O., Pennsylvania, Eads Bridge tracks and L. & N.

By exchanging only three of the East St. Louis freight houses; that is, moving the L. & N. into the C. C. C. & St. L. house, the B. & O. into the L. & N. house and the C. C. C. & St. L. into the B. & O. house, six grade crossings would be eliminated as follows:

- C. C. C. & St. L. across L. & N.,
- C. C. C. & St. L. across Eads Bridge tracks,
- C. C. C. & St. L. across B. & O.,
- C. C. C. & St. L. across Pennsylvania,
- B. & O. across Pennsylvania,
- B. & O. across Eads Bridge tracks.

Some new construction would be required, but the Committee believes that the benefits to be derived will justify the expenditures.

More grade crossings near Relay Depot and Bridge Junction can be eliminated by further swapping, but extensive changes would be required to adapt the present freight houses north of the Pennsylvania for the use of the railroads in the proper order. The changes that would be required would amount to practically reconstructing the facilities. The Committee believes that if there be any further rearrangement of freight houses they should be built north and south between Bridge Junction and Missouri avenue. When so rebuilt only nine grade crossings would remain out of twenty-five, ten more would be eliminated in addition to the six eliminated by the pre-

A horizontal scale bar with alternating black and white segments. It is labeled with '500', '0', '500', and '1000' at regular intervals. Below the bar, the text 'SCALE IN FEET' is written.

PREPARED FOR ENGINEERS COMMITTEE INVESTIGATING
ST LOUIS-EAST ST. LOUIS RAILROAD TERMINALS
BY
C.E. SMITH & CO CONSULTING ENGINEERS

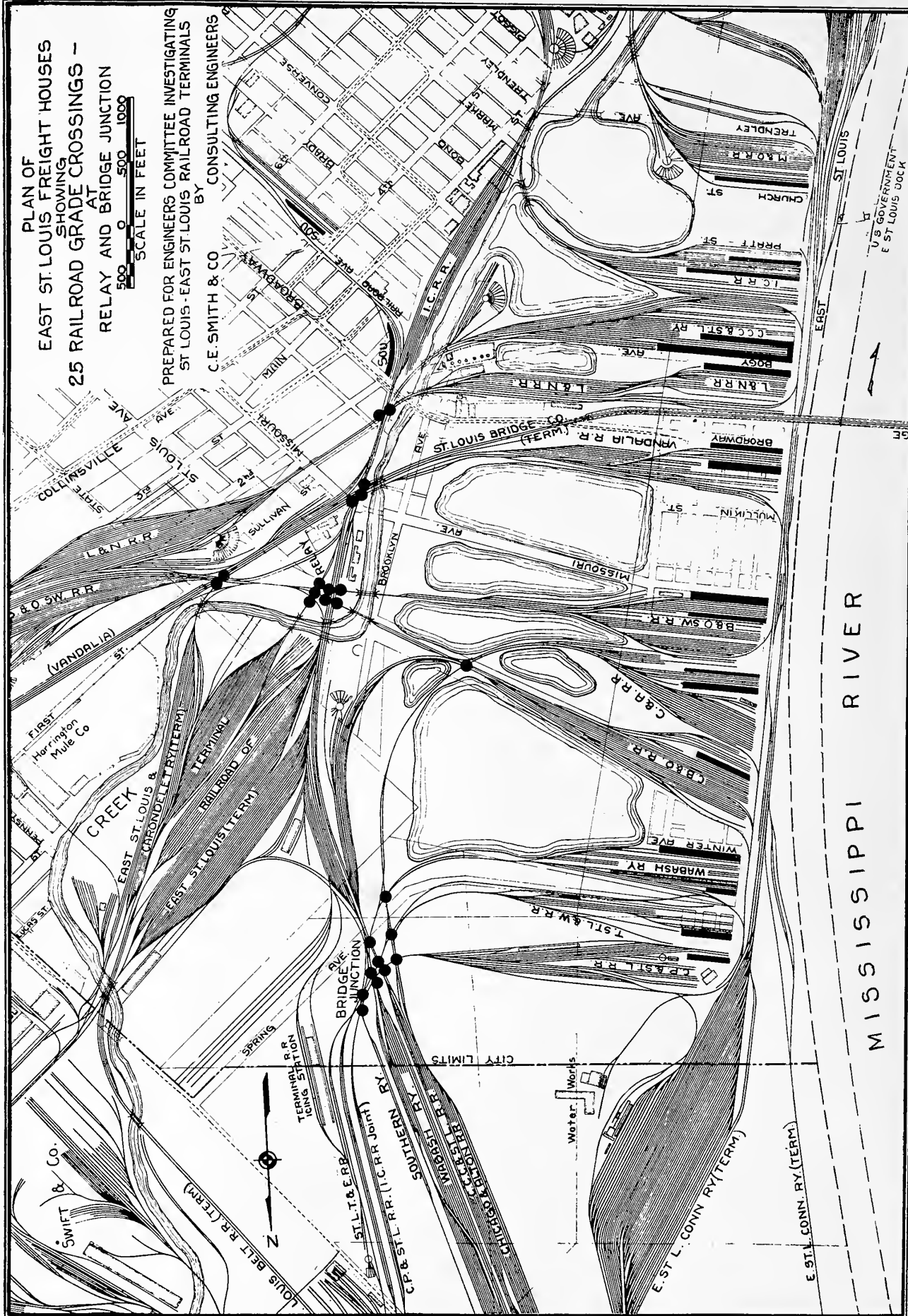


Fig. 116—Location of East St. Louis Freight Houses Showing Present Railroad Grade Crossings Between Relay and Bridge Junction.

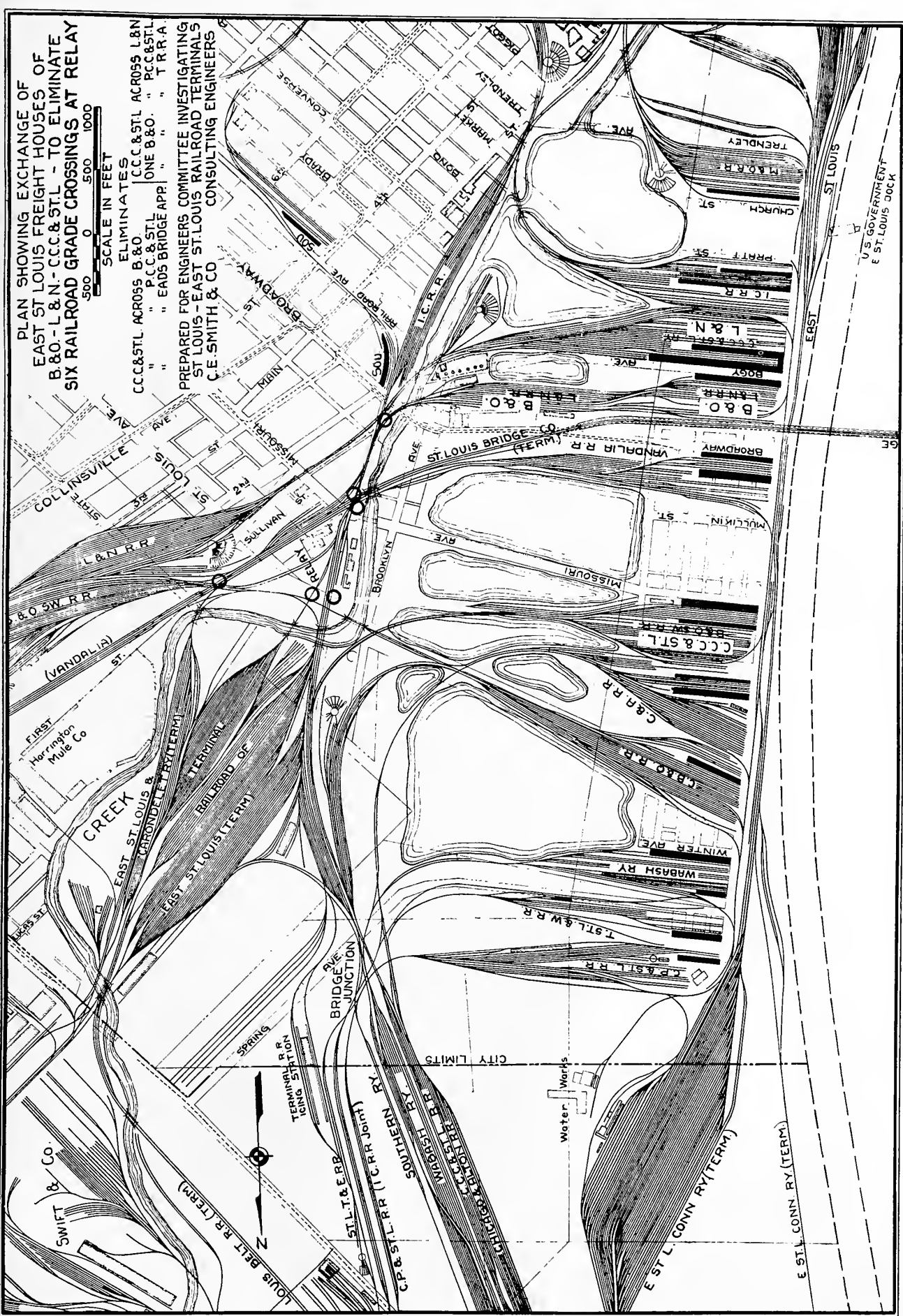
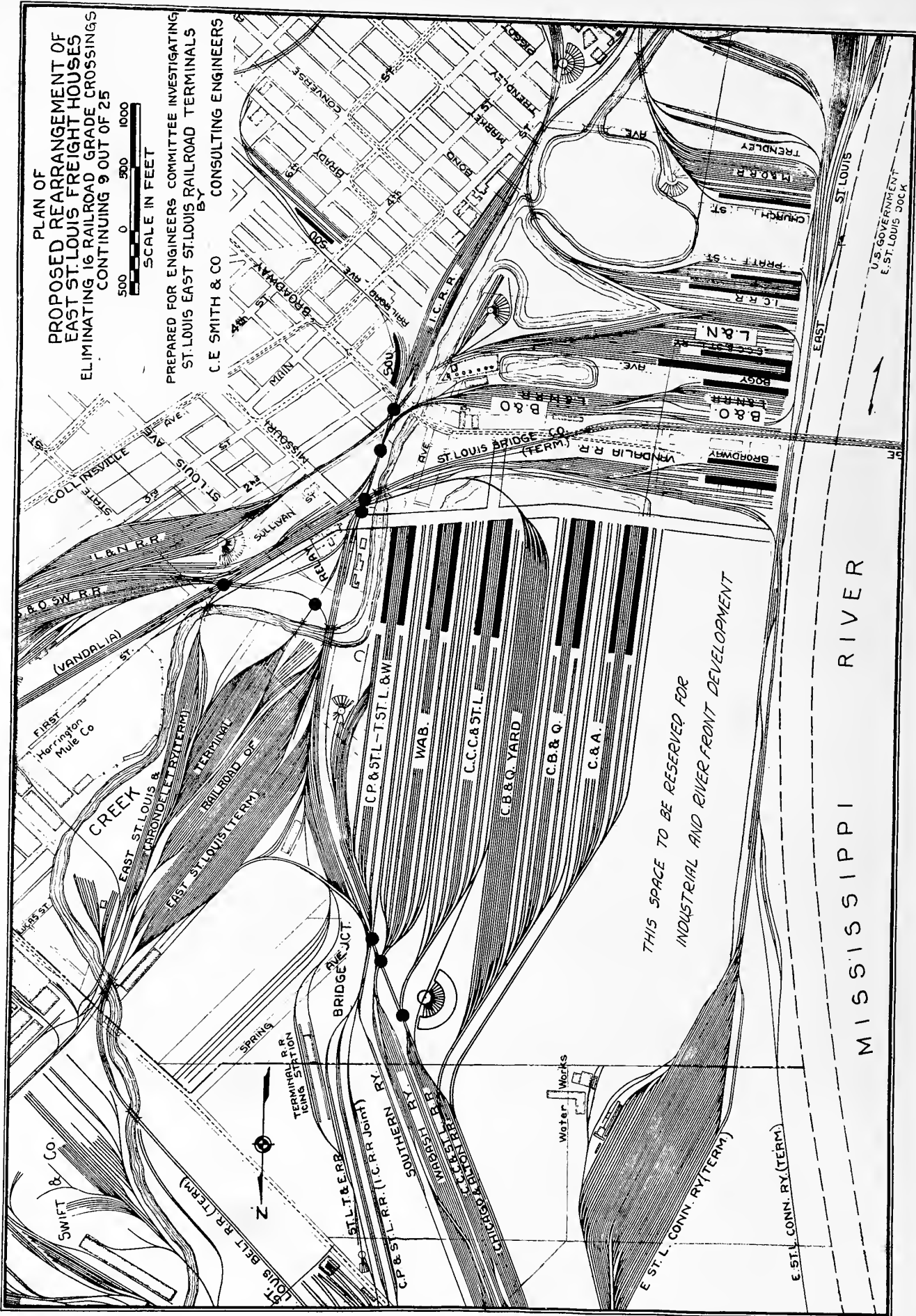


Fig. 117—Proposed Exchange of Three Freight Houses to Eliminate Six R. R. Grade Crossings.



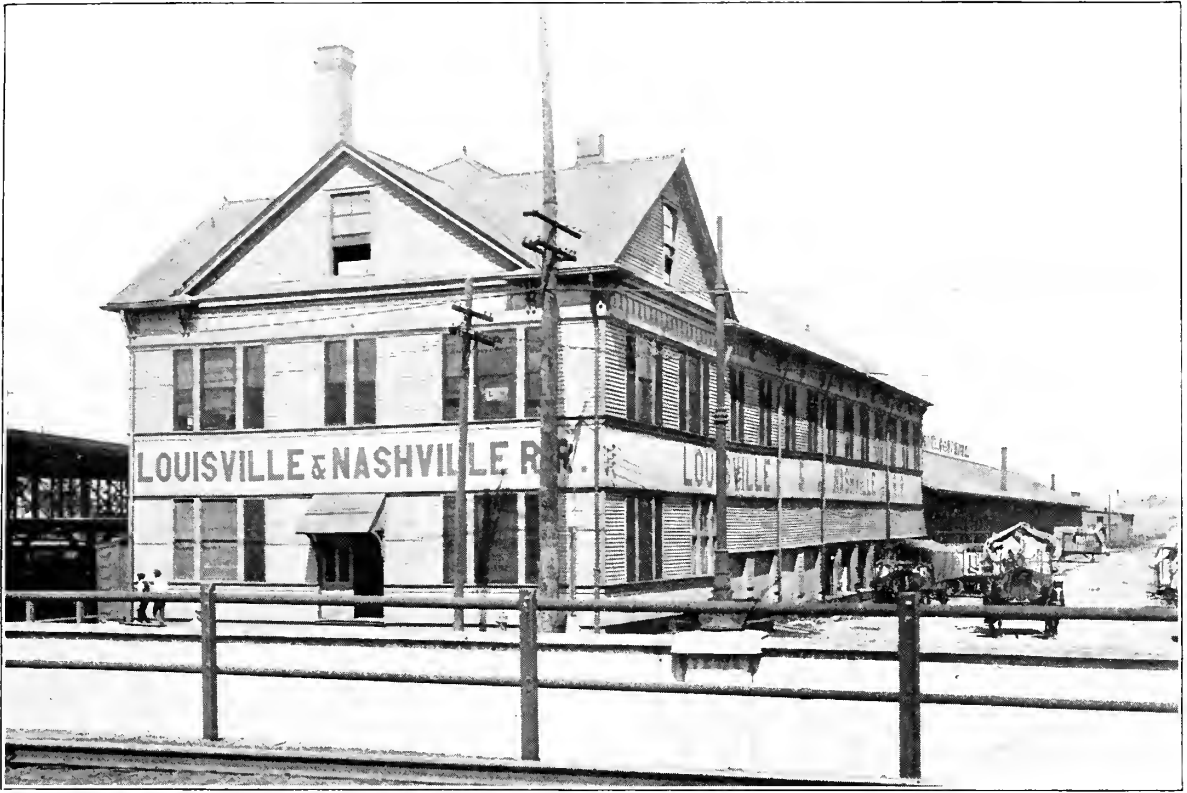


Fig. 119—L. & N. Freight Station—East St. Louis.

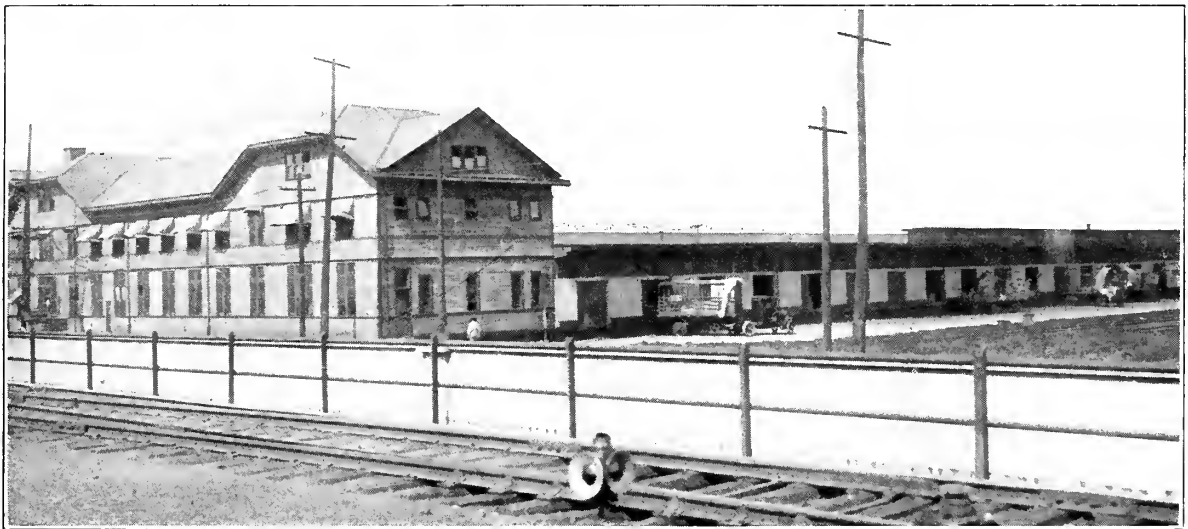


Fig. 120—C. C. C. & St. L. Freight Station—East St. Louis.

vious change, a total of sixteen done away with.

The Committee recommends that the railroads proceed at once to bring about the exchange of the three freight houses mentioned. The Committee does not recommend the more

extensive change in the northerly houses at present, but recommends that plans for that change in future be agreed upon by the interested railroads and that no improvements be made thereafter that would make the change more difficult or expensive.



Fig. 121—B. & O. Freight Station—East St. Louis.

The second step would release a valuable strip of property that would be available for future industrial development in connection with the river.

The second step would wipe out the present Burlington yard, which, however, is not very extensive. The Committee's plan makes provision for a new yard for the Burlington, but if the railroads adopt the outer group yard plan recommended by this Committee, the C. & A. will have an excess of yard capacity north of Bridge Junction, entirely sufficient to furnish the Burlington all it may require.

Grade Crossings of Railroad and Streets

There are about 350 highway grade crossings in the St. Louis-East St. Louis railroad terminals, 200 on the west side and 150 on the east side. There are many more potential grade crossings in undeveloped districts, of streets that were platted and recorded before railroad tracks were built and that some day may be opened across the tracks.

Many of the grade crossings are over switching tracks in industrial districts that are nec-

essary to the success of the industries, and will probably be continued indefinitely.

Many of the grade crossings are over railroad tracks that occupy streets longitudinally as the Terminal Railroad Association in Twenty-first street, East St. Louis, the Wabash and Terminal Railroad Association in Second street, North St. Louis, the Manufacturers' Railway in Second street, South St. Louis, the Terminal Railroad Association in Hall street and First street, the Burlington Railroad in First street, North St. Louis, the Missouri Pacific Railroad in First street, Front street and Poplar street, South St. Louis, the St. Louis Transfer Railway used by the Terminal Railroad Association in Lewis street and on Front street and the tracks of several railroads on the wharf.

Most of the crossings in St. Louis are along the river front, east of Third street. As there is only a narrow strip between them and the river, the highway traffic over most of them is comparatively light.

The rerouting of east side passenger trains over the Municipal Bridge and the north and south extensions of the Merchants Elevated in St. Louis north to North Market street, and south to Rutger street, will remove all passenger traffic and a large amount of freight traffic from streets now used and crossed at grade, although the surface tracks would continue to be used for freight movements.

The use of the Merchants Elevated and south extension between Mill Creek Valley and South St. Louis by the Missouri Pacific will eliminate the Poplar street track and seven grade crossings.

The grade crossing situation in East St. Louis is somewhat different from the St. Louis situation.

The business section of East St. Louis is entirely enclosed by railroad tracks; on the north by the B. & O. and Pennsylvania; on the east, by the Alton & Southern, Terminal and Southern Belts; on the south by the Southern and Illinois Central, and on the west by the tracks running north and south along Cahokia Creek.

East St. Louis is developing rapidly as an industrial center and its logical expansion industrially is northwardly, north of the B. & O. and Pennsylvania, and southwardly, south of the Illinois Central. The residential district is growing eastwardly from the belt lines. Grade crossing elimination therefore is vital to the community.

Proceedings for the separation of grades where North Ninth street crosses the Southern Belt, the Terminal Belt, the B. & O. and the Pennsylvania at the Willows, and where South Eighth street intersects the Illinois Central in East St. Louis, are now under way. The separation of grades at these points will open the north and south industrial territory of the City.

The carrying out of Plan "E" for rerouting

east side passenger trains as recommended by this committee will eliminate the grade crossings at Trendley avenue and Missouri avenue for highway traffic to and from the freight houses along the river front, and at South Main street, South Fourth street, South Eighth street, South Tenth street, Brady avenue, Converse avenue, Bond avenue, Market street, and Trendly avenue, on the Southern for traffic to and from the Municipal Bridge and the south industrial district. Plan "E" also provides for the elimination of the Broadway viaduct by placing Broadway under the railroad tracks, which would be raised somewhat.

The Committee also recommends that in working out the details of Plan E, consideration be given in the profile of the east approach to the elimination of the grade crossings at St. Clair avenue over the Pennsylvania, B. & O. and L. & N., as it is a very important crossing, being the only important highway artery to the Stock Yards District and to the communities to the north.

The grade crossings in industrial districts should be so adjusted as not to interfere with the necessary service to industries.

The Committee believes that it is not financially practicable to eliminate all highway grade crossings as a part of the plan of this report, and that the principal crossings should be a matter of negotiation between the individual railroads and the communities.

This committee recommends that each railroad study its grade crossing problems in the St. Louis-East St. Louis terminals, with representatives of the various communities, that general plans be agreed to for the future elimination of such crossings as it seems desirable to eliminate at some future time, and that thereafter in locating industries and making improvements nothing be done by either the railroads or the communities that would make it more difficult to eliminate any crossings.

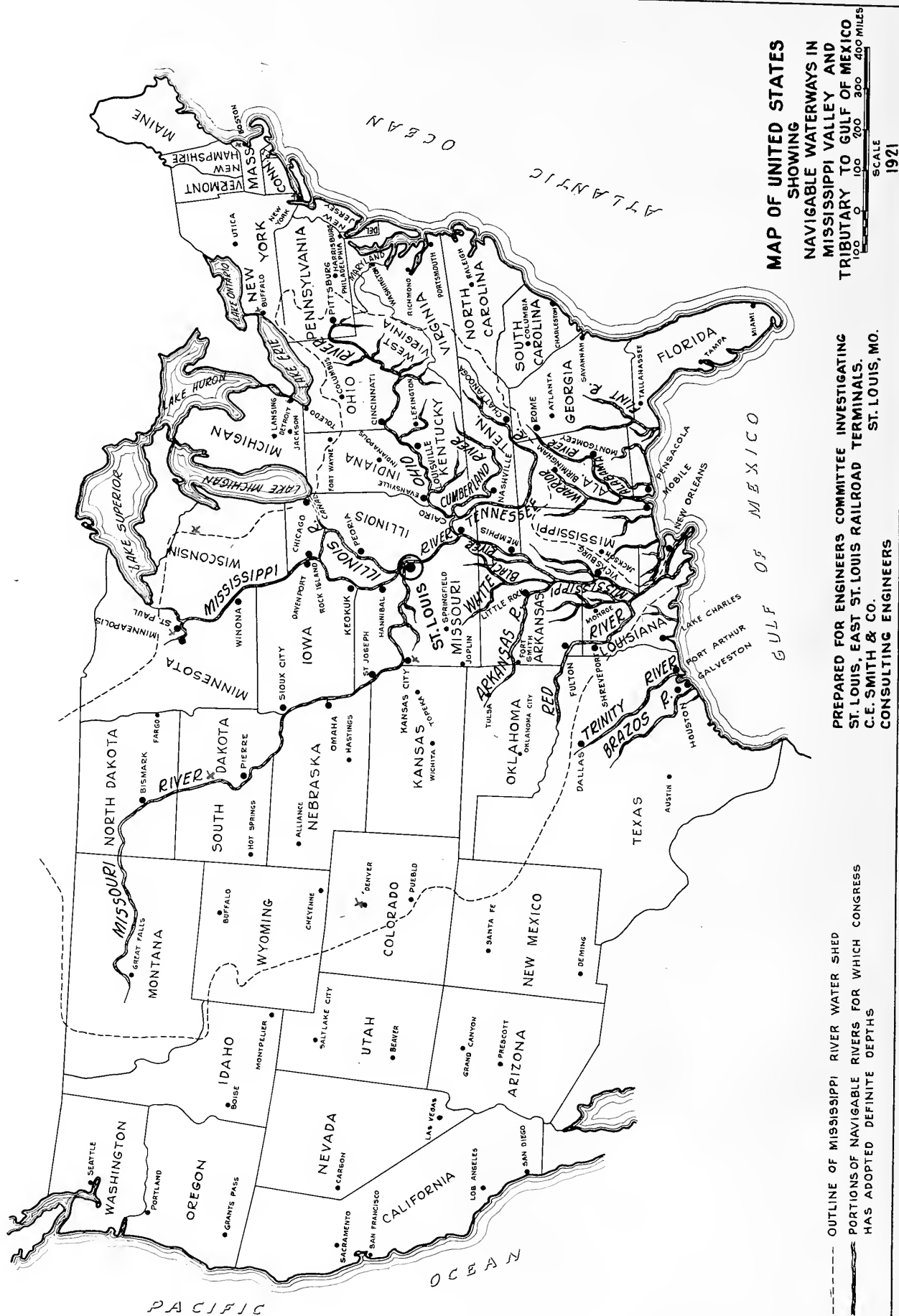


Fig. 122—Navigable Waterways in the Mississippi Valley.

RIVER TRANSPORTATION

St. Louis and East St. Louis River Front.

The City of St. Louis extends 20 miles along the west bank of the Mississippi River. About one-half the frontage is owned by the City; the remainder is owned by private interests, partly by railroads. This entire length of river front is served by railroads. The City owns railroad tracks from Arsenal street to the north City limits, about 14 miles, which are open to the use of all railroads on equal terms. Very little of the City-owned river front is tied up by long term grants, which makes it possible to develop it for industries requiring access to the river.

The City of East St. Louis extends along the east bank for only 2½ miles, which is almost entirely owned and occupied by railroads. St. Clair County south of East St. Louis and Madison County to the north extend along the east bank of the river opposite St. Louis, their entire front being privately owned.

On the two sides of the river there are forty miles of river front within the "Port of St. Louis," available for water front development, of which only a part has been developed.

River Traffic and Equipment

In the old steamboat days the St. Louis river front was the scene of great activity as it was the center of operation of the packet type of steamboat plying on the Upper and Lower Mississippi, Missouri, Illinois, Ohio, Cumberland, Tennessee, Arkansas, White and Red Rivers and their tributaries. Although the rivers have been improved by the United States Government, the river traffic has gradually dwindled away as railroads developed along the river banks. The old type packet could not compete with the railroad, and it was relegated to excursion traffic and to serve points having inadequate railroad service. Large industries,

such as the Aluminum Company of America, the United States Steel Corporation and others, have handled part of their freight on the river in recent years by modern steel towboats and barges.

During the period of Federal control of the railroads, the United States Railroad Administration established freight service on the Lower Mississippi River between St. Louis and New Orleans with modern barges and steam towboats. At first a number of old steamboats and barges were purchased and leased pending the construction of forty 2,000-ton closed-top cargo barges and six 2,000 horse-power screw-propelled towboats. This new equipment has been completed and placed in service.

Nine feet minimum depth is available the entire year between New Orleans and Cairo, about one hundred and eighty miles below St. Louis. Eight feet minimum depth is available for ten months of the year between St. Louis and Cairo; the remaining two winter months are interfered with by ice and low water.

For the Upper Mississippi River, President Wilson made an appropriation out of his emergency fund for floating equipment to handle Illinois coal from East St. Louis to St. Paul, and Minnesota iron ore from St. Paul to St. Louis. For this service four 2,000 horse-power stern-wheel towboats and nineteen 3,000-ton open-deck barges have been completed, but not yet placed in that service.

Five feet depth is available eight months of the year between St. Paul and St. Louis. The remaining four months are interfered with by ice and low water.

Upon the termination of Federal control of the railroads, the barge service on the lower river was turned over to the War Department, and has since been operated by the Mississippi-Warrior Section of the Division of Inland Waterways.

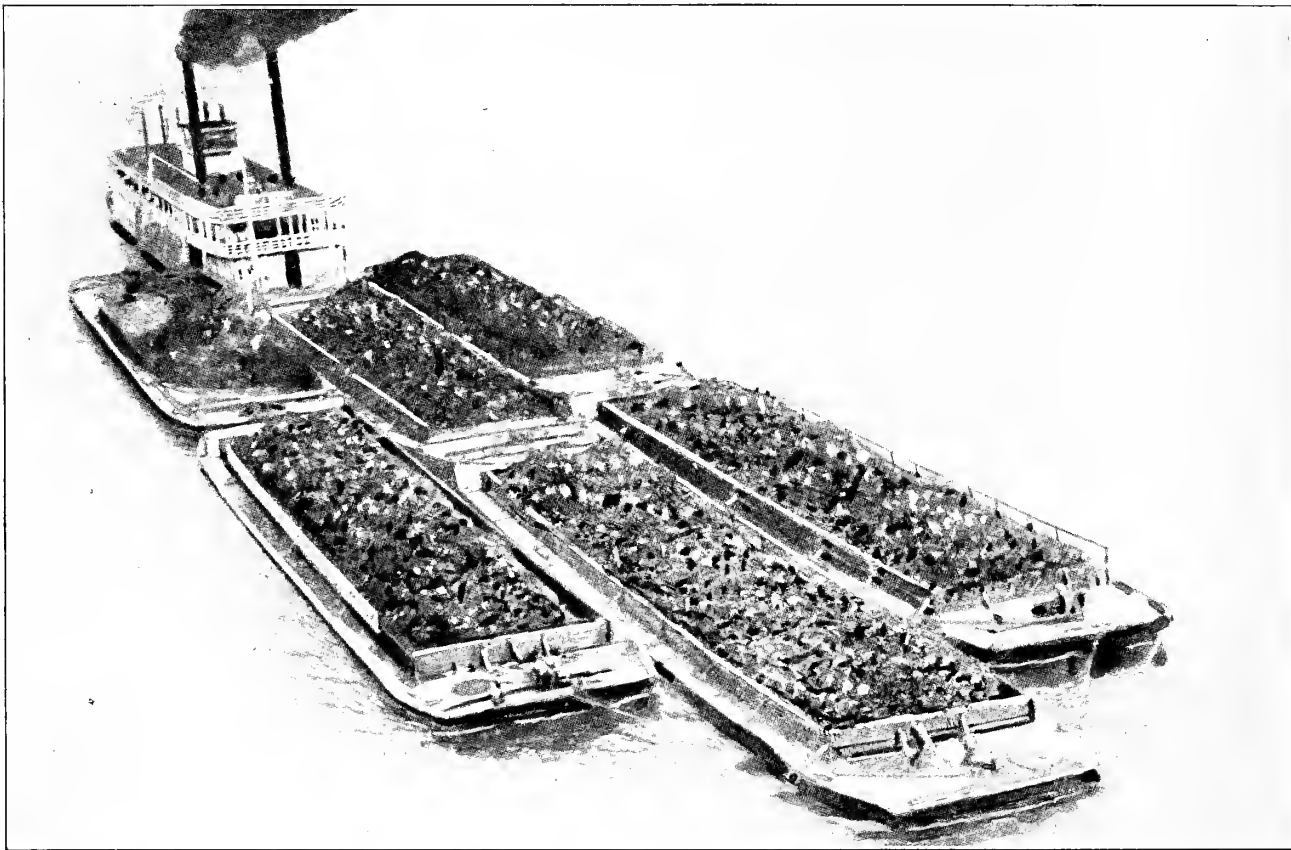


Fig. 123—U. S. Government Upper River Towboat and Barges.

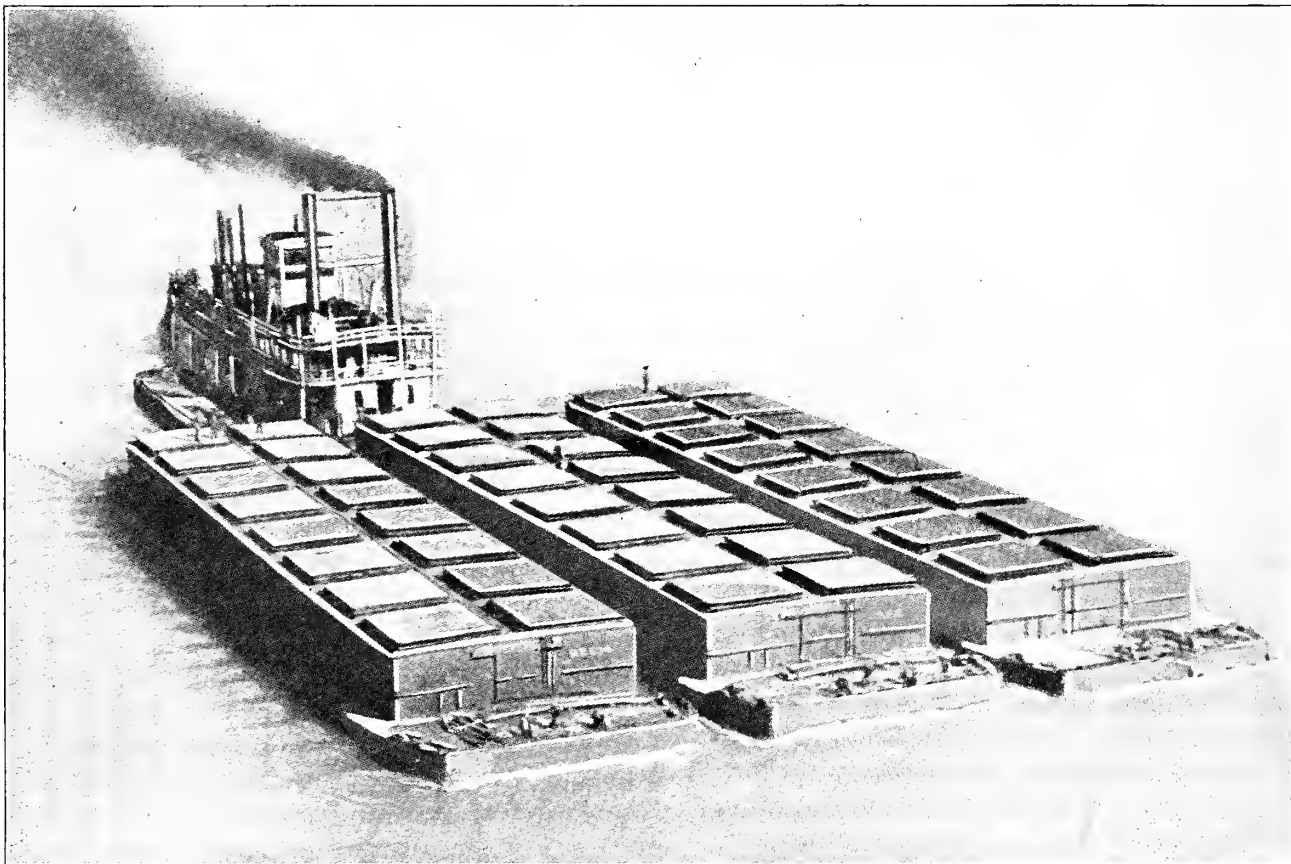


Fig. 124—U. S. Government Lower River Towboat and Barges.

River Policy of United States Government

The policy of Congress with reference to this Government activity was expressed in the Transportation Act of 1920. Under section 412 of that act, the two paragraphs under subdivision "a" of the 13th paragraph of section 6 of the Interstate Commerce Act was amended so as to read as follows:

"(a) To establish physical connection between the lines of the rail carrier and the dock at which interchange of passenger or property is to be made by directing the rail carrier to make suitable connection between its line and a track or tracks which have been constructed from the dock to the limits of the railroad right of way, or by directing either or both the rail and water carrier, individually or in connection with one another, to construct and connect with the lines of the rail carrier a track or tracks to the dock. The Commission shall have full authority to determine and prescribe the terms and conditions upon which these connecting tracks shall be operated, and it may either in the construction or the operation of such tracks, determine what sum shall be paid to or by either carrier; Provided, That construction required by the Commission under the provisions of this paragraph shall be subject to the same restrictions as to findings of public convenience and necessity and other matters as in construction required under section 1 of this act."

Under section 413 of the act, paragraph "c" of the 13th paragraph of section 7 of the Interstate Commerce Act is amended to read as follows:

"(c) To establish proportional rates, or maximum, or minimum or maximum and minimum proportional rates, by rail to and from the ports to which the traffic is brought, or from which it is taken by the water carrier, and to determine to what traffic and in connection with what vessels and upon what terms and conditions such rates shall apply. By proportional rates are meant those which differ from the corresponding local rates to and from the port and which apply only to traffic which has been brought to the port or is carried from the port by a common carrier by water."

In the power to regulate rates under section 422 of the Transportation Act, a new section 15a is added, by which the power to fix rates expressly excludes inter alia any belt line railroad, terminal switching railroad, or other terminal facility, owned exclusively and

maintained, operated and controlled by any State political subdivision thereof.

Section 500 of the act provides as follows:

"It is hereby declared to be the policy of Congress to promote, encourage, and develop water transportation service, and facilities in connection with the commerce of the United States, and to foster and preserve in full vigor both rail and water transportation.

"It shall be the duty of the Secretary of War, with the object of promoting, encouraging, and developing inland waterway transportation facilities in connection with the commerce of the United States, to investigate the appropriate types of boats suitable for different classes of such waterways; to investigate the subject of water terminals, both for inland waterway traffic and for through traffic by water and rail, including the necessary docks, warehouses, apparatus, equipment, and appliances in connection therewith, and also railroad spurs and switches connecting with such terminals, with a view to devising the types most appropriate for different locations, and for the more expeditious and economical transfer or interchange of passenger or property between carriers by water and carriers by rail; to advise with communities, cities, and towns regarding the appropriate location of such terminals and to co-operate with them in the preparation of plans for suitable terminal facilities; to investigate the existing status of water transportation upon the different inland waterways of the country, with a view to determining whether such waterways are being utilized to the extent of their capacity, and to what extent they are meeting the demands of traffic, and whether the water carriers utilizing such waterways are interchanging traffic with the railroads; and to investigate any other matter that may tend to promote and encourage inland water transportation. It shall also be the province and duty of the Secretary of War to compile, publish and distribute, from time to time, such useful statistics, data, and information concerning transportation on inland waterways as he may deem to be of value to the commercial interests of the country."

Volume of River Freight

During 1920 the normal movement of freight between St. Louis and New Orleans amounted to about 5,000 tons per month. During October, 1920, the amount was as follows:

St. Louis local freight.....	346 tons.
Through freight to and from points northwest and northeast of St. Louis making river rail transfer there	5,151 tons.

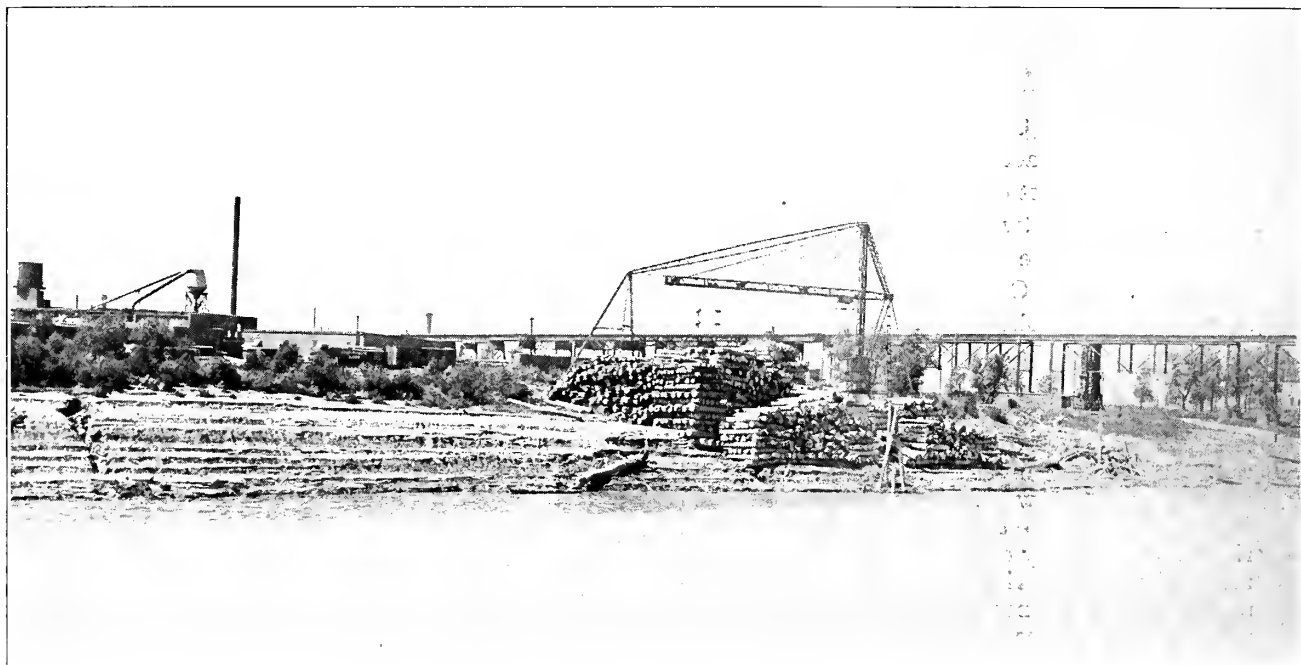


Fig. 125—Log and Lumber Derrick—St. Louis River Front.

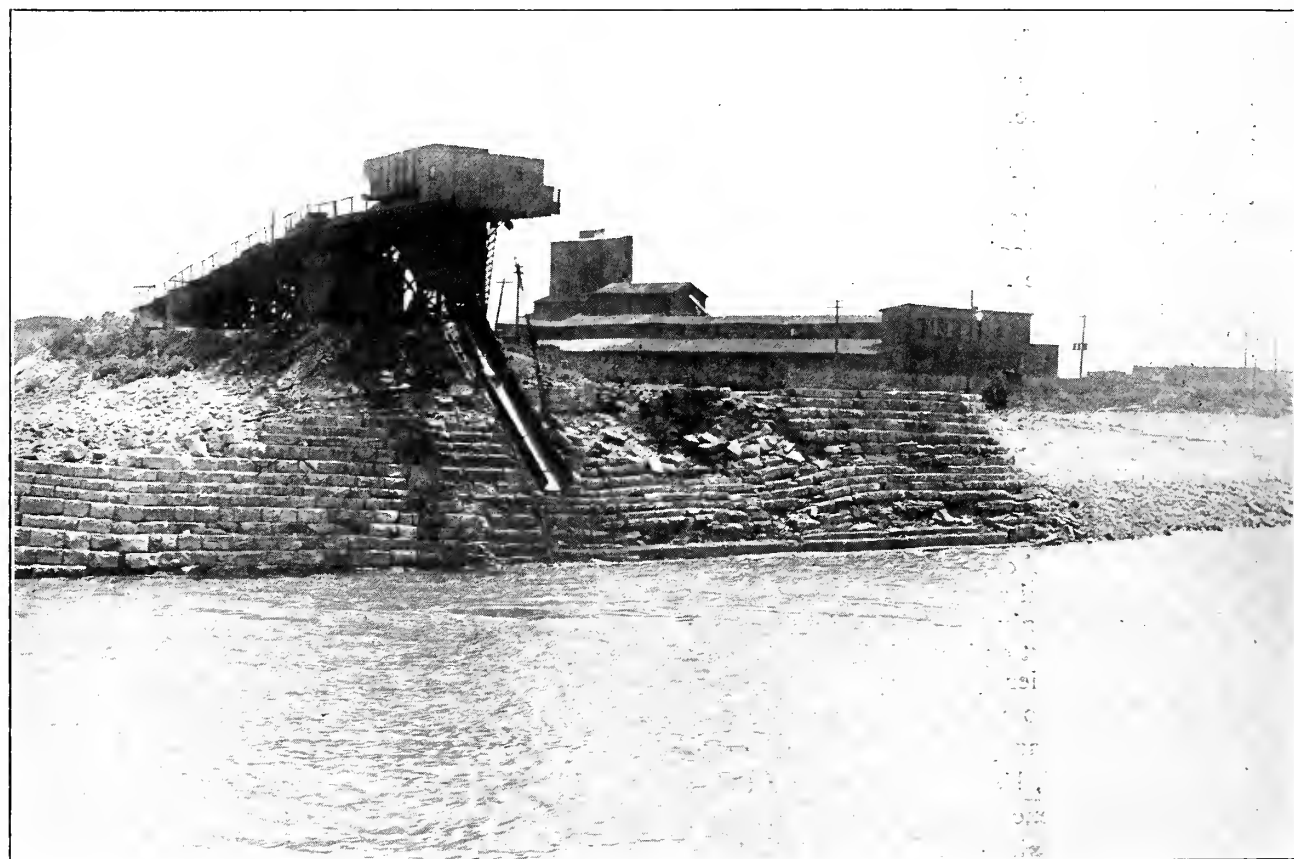


Fig. 126—Southern Ry. Coal Dock—East St. Louis.

Shippers who did not use the barge line during the remainder of that year were not slow to avail themselves of its service during the Switchmen's strike in May, 1920, when the railroads were crippled. During that month the amount of freight handled was as follows:

St. Louis local freight.....	4,661 tons
Through freight	10,674 tons

During 1921 the freight handled by the barge line at St. Louis averaged about 15,000 tons per month.

River Terminal Facilities

The service that the barge line could perform has been limited by the lack of proper terminals and facilities for effecting the transfer of freight between land and water carriers.

New Orleans is well supplied with docks and transit sheds, but as they have been used almost exclusively by ocean going boats which carry their own mechanical equipment, the docks have not been properly equipped for the river barges. This deficiency is being corrected by the co-operation of the local and national governments.

No river terminal facilities are available at Vicksburg or Cairo or smaller cities along the river, but the Federal government is getting ready to build them. At Memphis the local and national governments are co-operating in the construction of river terminals.

There is a general impression that the facilities for transferring freight between water and land at St. Louis are confined to those afforded by the wharf boats and paved wharf along the river front adjoining the business district between the Eads Bridge and the Municipal Bridge. On the contrary many other facilities are available.

Four lumber companies have log and lumber derricks on the river front, to unload logs and lumber from rafts and barges on the river. This type of derrick is admirably adapted for handling a large number of other commodities that can be carried by water to much better advantage than by rail. These derricks well illustrate the manner in which the river front can be used by private industries for their commodities. Additional derricks can be installed at comparatively small expense.

Just below the Municipal Bridge on the East St. Louis river front the Southern has coal unloading hoppers. The depth of water in front of the hoppers and the elevation of the hoppers are such as to permit transferring coal from cars to barges at all stages of the river. This will enable the transfer of a greatly increased tonnage of coal from cars to barges at that point. Coal from any mines can be unloaded here as the Southern Railway has a belt line around East St. Louis that connects with all railroads.

The Aluminum Ore Company has constructed a dock for the handling of aluminum ore from barges to cars and coal from cars to barges on the East St. Louis river front. This dock is available for the handling of a greatly increased tonnage and variety of commodities other than the coal and ore for which it was built; it is on the Alton & Southern Railroad, which connects with nearly all east side railroads.

The Mississippi Valley Iron Company, which operates blast furnaces in South St. Louis, has been very active in promoting the handling of coal and ore on the Mississippi River by barges and towboats. Its river front is now being prepared for the installation of a large ore bridge for handling ore from barges to the ore piles, which will also be available for handling pig iron from the blast furnaces to boats and barges.

There are five grain elevators with storage bins on the St. Louis river front, three of which are now equipped for transferring grain between rail and boat. These elevators have good boat landings and are capable of handling a greatly increased volume of grain.

There are twelve points on the Mississippi River front at St. Louis where railroad inclines for transferring cars to and from transfer boats are now being maintained or have been maintained in the past. Those that have been maintained in the past could be restored if required. These inclines have been used in the past for transferring cars between rail and barges. Railroad cars may be placed on them alongside of boats and freight transferred on the level between boats and cars.

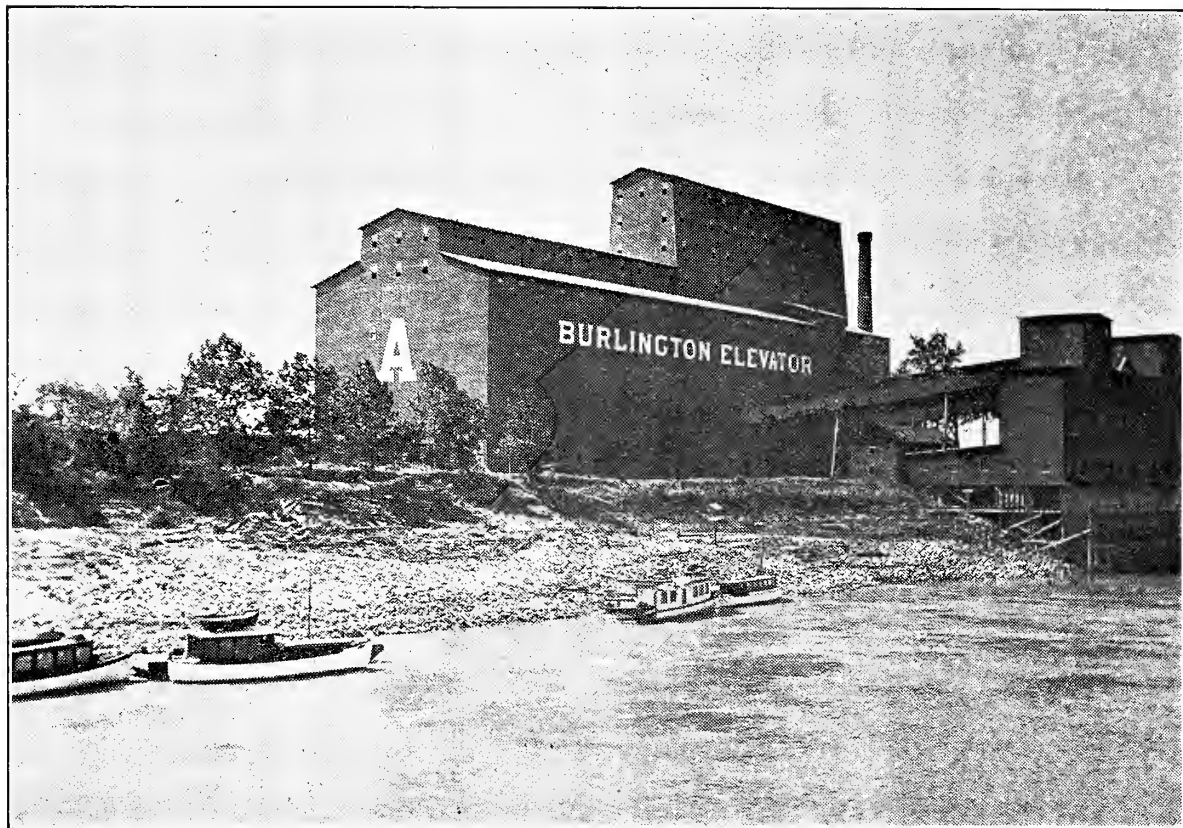


Fig. 127—Burlington Grain Elevator, North St. Louis.

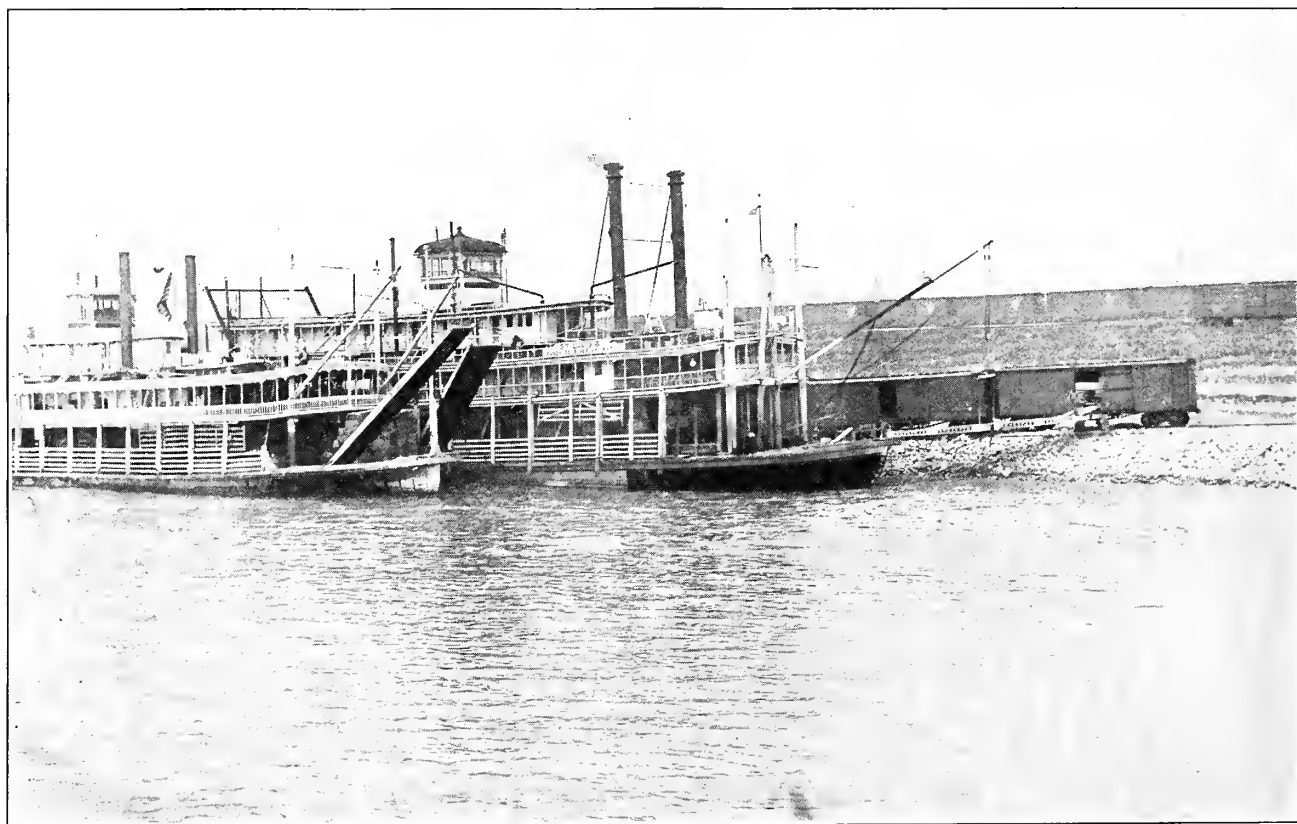


Fig. 128—Direct Transfer of Freight River-Rail—St. Louis River Front.

Cradles move up and down these inclines to bring car floors level with the deck of barges and boats. All these inclines were furnished with adequate railroad connections and convenient switching yards. By the assistance of switch engines in placing cars on and removing cars from these cradles, cars can be loaded and unloaded at each incline. The use of these inclines for the above purpose will greatly facilitate and cheapen the transfer of certain classes of freight between cars and boats at St. Louis.

The East St. Louis Dock and Warehouse of the Kansas City, Missouri River Navigation Company, which has been in operation for some time, is now owned and used by the Government barge line.

St. Louis is very fortunate in having available one of the very best locations on the river for the construction, repair and remodeling of barges and boats, the marine ways and docks at South St. Louis. The river front at this point consists of a slope of solid rock, on which the rails of the marine ways are located. The marine ways occupy a length along the river of about 900 feet and a width of about 600 feet. The cradles and rails will accommodate six large barges, or boats of similar size, simultaneously, and the surrounding land is sufficient to provide room for all necessary buildings and equipment to assemble and manufacture the parts for the boats to be made on these ways. Additional land similarly situated north of the ways is available for future expansion.

The Government is now building for its barge line operations a floating river rail terminal on the East St. Louis river front, and a river rail terminal on the St. Louis river front at Rutger street.

North Market Street Municipal Dock

In spite of the fact that St. Louis and East St. Louis were already quite well provided with river rail terminals and mechanical handling facilities, most of which, however, while having capacities far in excess of the business moving through them, were limited in scope to certain commodities, the City Administration of St. Louis, in 1916, appropriated funds for the construction of a modern river rail

terminal of permanent construction at North Market street, so designed as to permit the installation of any type of mechanical equipment that has been successfully used in the transfer of freight between water and land, and thereafter appropriated additional funds from time to time as business required, until today the dock stands 60 per cent complete, after an expenditure of \$600,000.00.

It was the intention of the City to continue to appropriate funds for the completion of this dock in the immediate future, but in view of the Government having appropriated funds for a dock in South St. Louis and one in East St. Louis, as well as at Cairo, Memphis, Vicksburg and New Orleans, work on the North Market Street Dock under municipal appropriations practically stopped and there are now no appropriations for the completion of the North Market Street Dock.

The building of the North Market Street Dock was carried out in such a way, however, that after the first 25 per cent was completed that much and any additions could be used efficiently. At the present time the Government is making use of the North Market Street Dock in the transfer of practically all freight for the barge line. The capacity of the North Market Street Dock today is at least 2,000 tons per day. The Government has not exceeded 1,000 tons per day and does not average over 500 or 600 tons per day.

The completion of the dock does not require any additional river construction, but merely an increase in the number of mechanical handling facilities, warehouses, railroad tracks and platforms. When the present structure is so equipped, this dock will have a capacity of 10,000 tons per day, far in excess of the capacity of all the river carriers now serving St. Louis, even though there were no other river rail terminals.

At the present time the North Market Street Municipal Dock consists primarily of a reinforced concrete river wall, 900 feet long, reaching from 10 feet below low water to the highest flood stage.

Four of the new large Government barges can be placed alongside this dock for load-

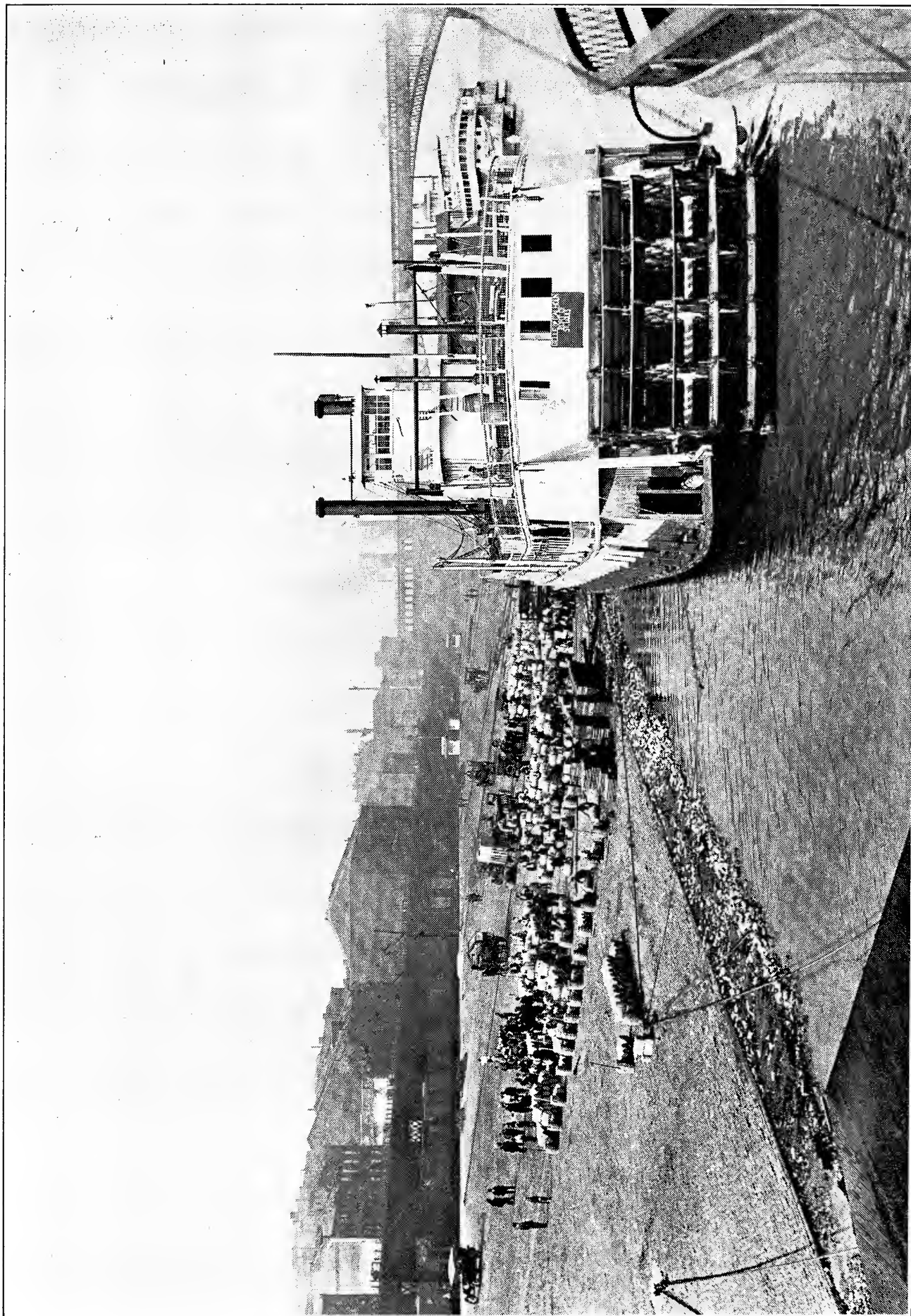


Fig. 129—Old St. Louis Levee Scene.

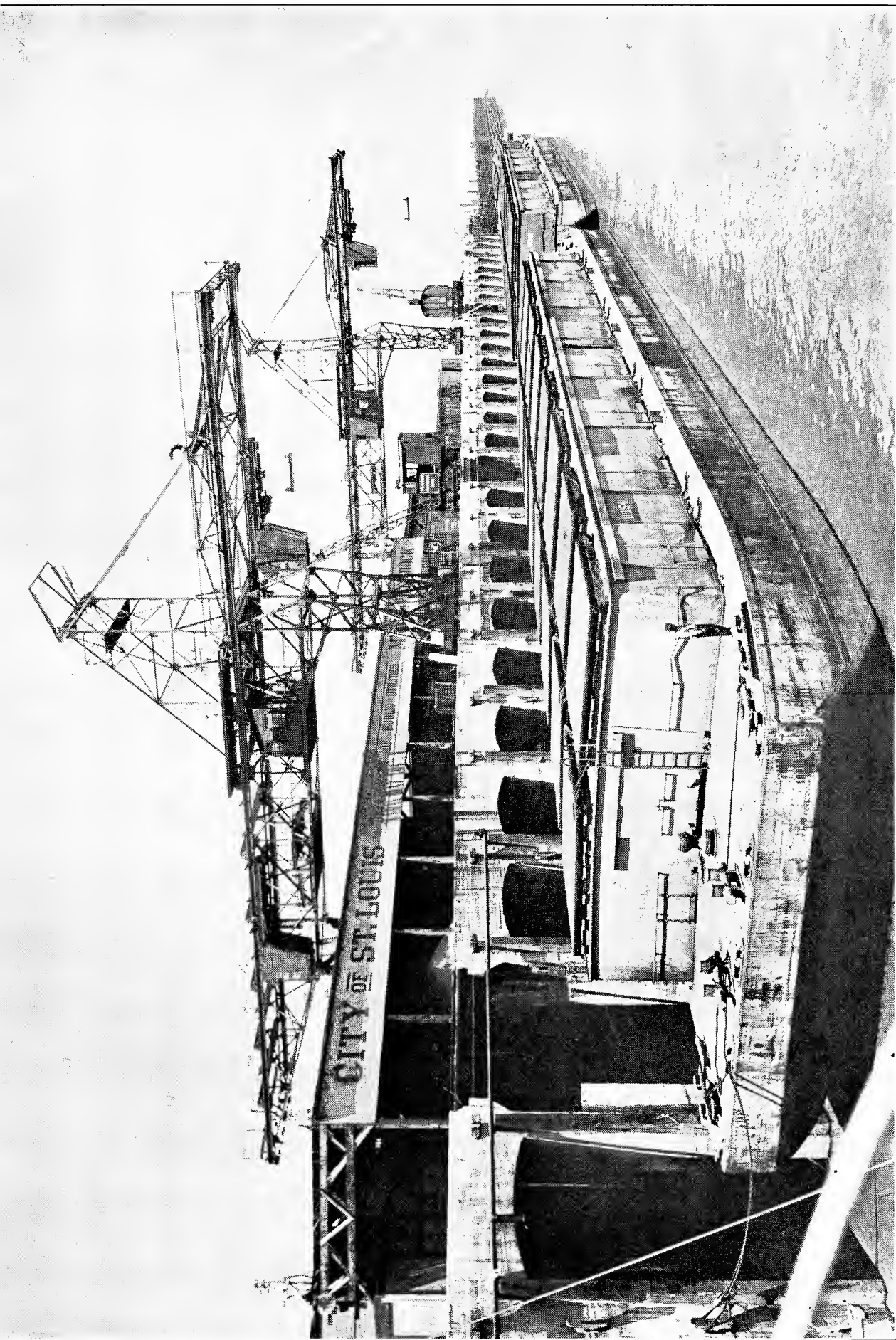


Fig. 130—North Market Street Municipal Dock.

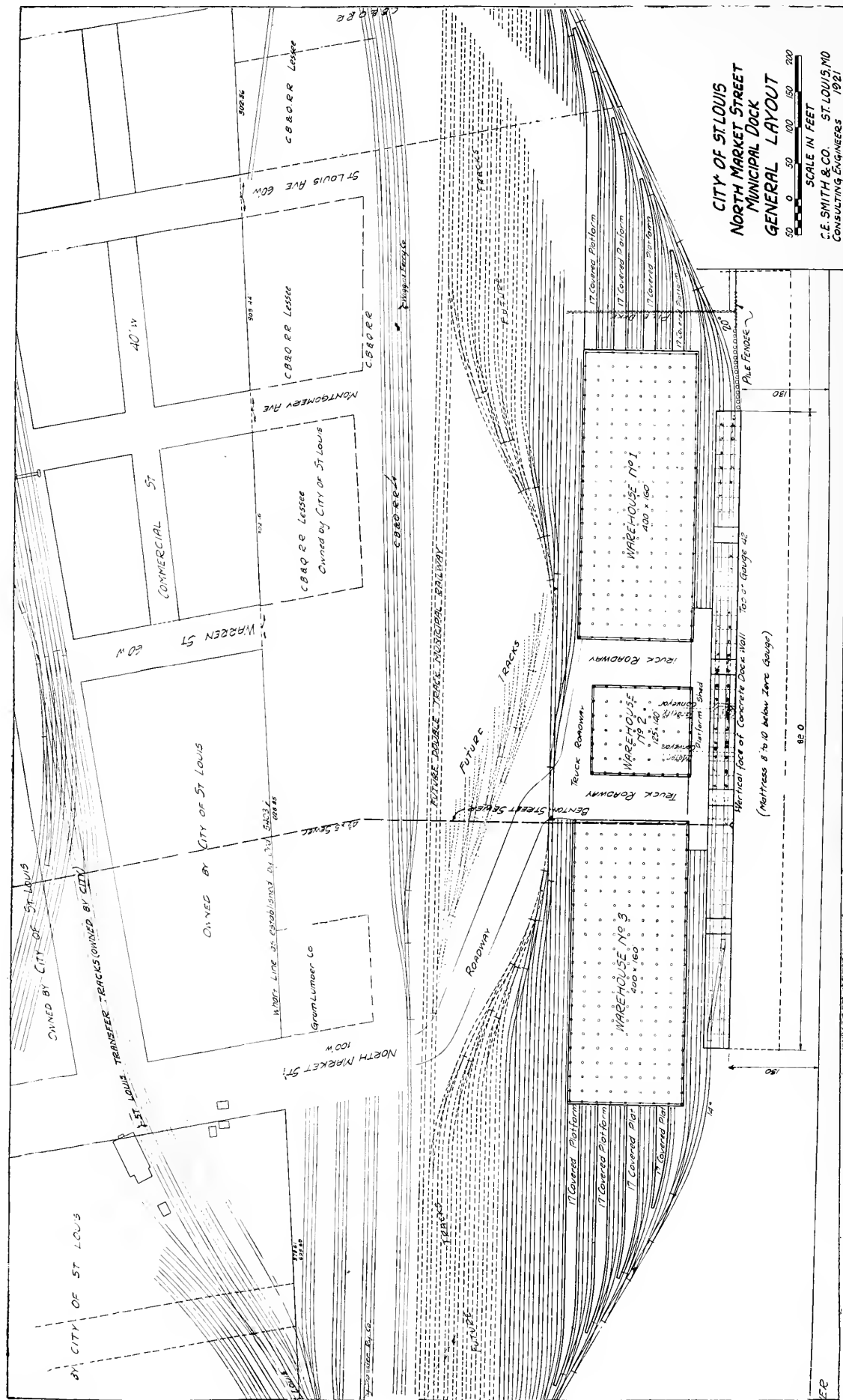


Fig. 131—Layout of North Market St. Municipal Dock.

ing and unloading simultaneously. Upstream from the concrete wall is a pile fender 2,000 feet long for tying up loaded barges preparatory to dropping them down before the dock for unloading and reloading. Downstream from the concrete wall it is expected to build a similar pile fender to which reloaded barges may be dropped and tied up until the towboat is ready to take them away.

On top of the dock are two twin overhead gantry cranes carrying four electric telfer hoists. These hoists can reach every point from the far outer edge of the barges to the warehouse floor, without interfering with any of the operations on top of the dock or on the railroad tracks. These have been in successful operation for several months and have already proven the correctness of their design. An operator in a telfer easily handles twice as much tonnage as an operator in a locomotive crane.

There are also several locomotive cranes on the dock, a spiral gravity conveyor, a continuous belt conveyor and several chutes. It has been the intention to install more spiral gravity conveyors, continuous belt conveyors and overhead gantries to increase the mechanical handling capacity as requirements demand.

On the land side there are now two warehouses covering 40,000 square feet, and also railroad tracks on which 70 railroad cars may be placed at one time for loading and unloading. Space has been provided, and the ultimate plans call for warehouses covering 150,000 square feet. The ultimate plans call for railroad tracks alongside platforms for loading and unloading 300 cars at one time, with storage tracks for 1,000 cars adjoining the terminal.

Developments indicate that the North Market Street Dock is well located and designed, now has a capacity several times the amount that is moving and, when finished, according to the plans, will have a capacity of 10,000 tons per day, far in excess of the carrying capacity of the floating equipment.

In view of the fact that the Government has appropriated funds for dock construction at St. Louis as well as elsewhere, it will be diffi-

cult, if not impossible, to secure any more large appropriations from the City for dock construction, or for the completion of the North Market Street Dock. However, the City officials have expressed a willingness to spend on the docks all amounts collected as wharfage. As this will not complete the dock fast enough, more money must be found.

The completion of the North Market Street Dock, according to the plans for its ultimate development, should be carried forward as rapidly as the requirements of river traffic necessitates.

Improvement of St. Louis River Front

As the Mississippi River hugs the high ground on the St. Louis side, there are stretches where the river front is quite narrow. As the East St. Louis levees have been completed and as the bridges definitely fix the channel, no change is possible between the Merchants and the Municipal bridges.

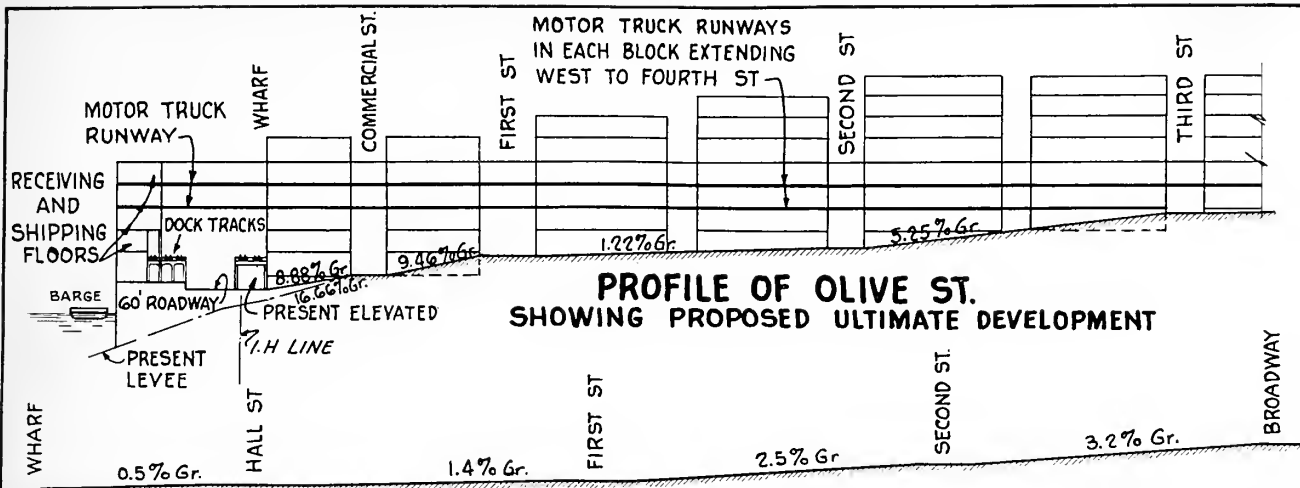
Below the Municipal Bridge it is possible to increase the space available for river front development in South St. Louis by shifting the harbor lines to the east starting at the Municipal Bridge, increasing to a maximum of about 140 feet at Lesperance street, and running out near Potomac street. There are no improvements on the east bank that would prevent the change. In fact, the east river front has never been filled out. An agreement was reached several years ago between the owners of the east river front who would lose land, and the owners of the west river front, including the City of St. Louis, who would gain land, but the City was not ready at that time to appropriate the necessary funds.

This improvement should be carried out as the extra width of river front that St. Louis would gain will be needed more and more as time goes on for railroad tracks and river landings.

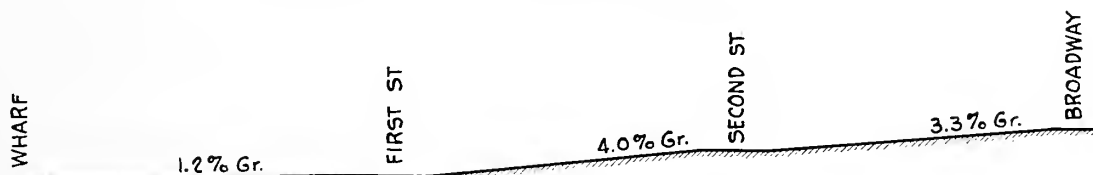
Above the Merchants Bridge the river makes a long bend to the west and then to the east for a distance of six miles to the Chain of Rocks. On the St. Louis concave side of the bend there is the usual swift current and bank cutting which makes it diffi-



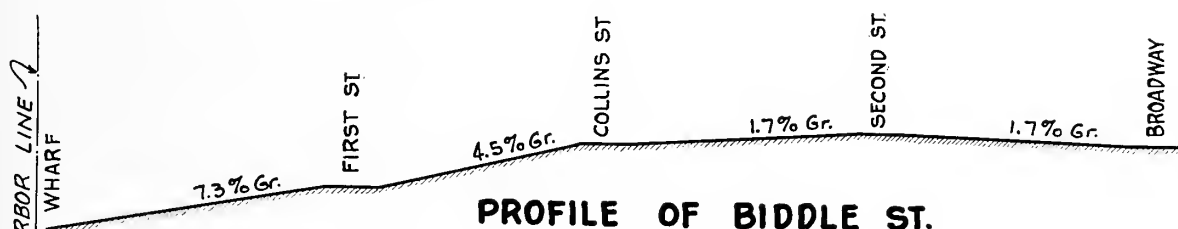
Fig. 132—Present and Proposed Harbor Lines Above Merchants Bridge.



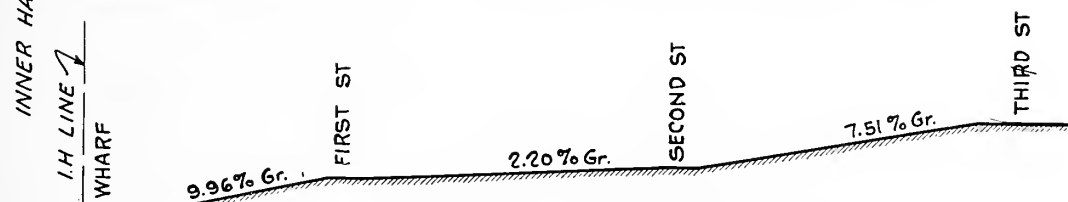
PROFILE OF NORTHMARKET ST.



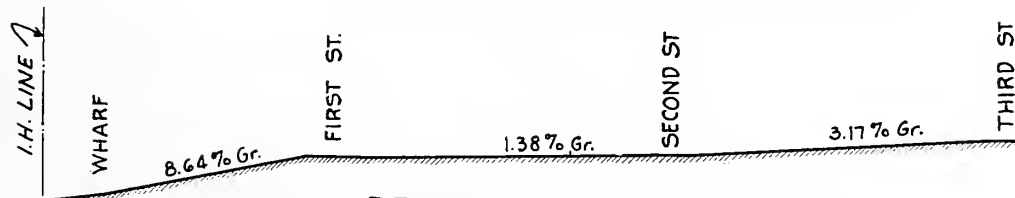
PROFILE OF TYLER ST.



PROFILE OF BIDDLE ST.



PROFILE OF WASHINGTON AVE.



PROFILE OF MARKET ST.

TYPICAL CROSS SECTION OF PROPOSED ULTIMATE WAREHOUSE-RAILROAD AND DOCK DEVELOPMENT OF ST. LOUIS WATER FRONT

100 0 100 200

HORIZONTAL SCALE

1921

50 0 50 100

VERTICAL SCALE

PREPARED FOR ENGINEERS COMMITTEE INVESTIGATING

ST. LOUIS-EAST ST. LOUIS RAILROAD TERMINALS

C.E. SMITH & CO.

CONSULTING ENGINEERS

Fig. 133—Proposed Ultimate Development of St. Louis Water Front.

cult and expensive to maintain the bank, and will make any river terminal there extremely dangerous to operate.

On the east convex side of the bend there is the usual shallow water and sand bars. Islands and sloughs occupy the east bank for over two miles back to the main land at the widest point.

To correct this condition by making the river cut across the bend, a dyke was built several years ago at the Chain of Rocks. Since that time the upper head of the island or sand bar has receded over 3,000 feet and a slough in a fairly direct line across the sand bar has widened appreciably.

This process of river straightening should be controlled before the vagaries of the river result in further detours. If this river straightening be properly directed and controlled, the east river bank will be available for river terminal construction by reason of the worthless sand bar being washed away, the west river bank will be available for river terminal construction by reason of the sharp curve, bank cutting and swift current being eliminated, and about 2,700 acres of valuable river front land will be added to St. Louis.

The riparian owners on both sides of the river should co-operate to direct control and expedite this straightening of the river above the Merchants Bridge.

The river front above and below the Eads Bridge is somewhat inaccessible to the business district by reason of the steep grades on the east and west streets. At Washington avenue the grade from the wharf to First street is about 10 per cent, from Second to Third street is about 7.5 per cent. At Olive street the grade from the wharf to Commercial street is over 16 per cent and from Second to Third street is 5.25 per cent. Notwithstanding these heavy grades, the river front from Tyler street

to Chouteau avenue is one of the best l. c. l. freight producing sections in the business district.

In view of this fact the best economic development of this territory should be planned as a whole, taking into account particularly its strategic location, for industrial purposes.

In recent years a great many plans have been suggested for the improvement of the river front, particularly the report of a Committee of five Engineers submitted to the Chamber of Commerce and the Commercial Club, dated February 6th, 1917.

The following suggestion which was originally submitted to the City Plan Commission by C. E. Smith, consulting engineer, is also submitted.

Although the wharf space owned by the City along this property is quite narrow, it is wide enough for the construction of a vertical river wall similar to the wall at North Market street, with fill behind. The clearance under the Merchants elevated structure will permit the fill behind the wall to be carried up six feet and the top of the wall placed above high water.

Such a wall could be surmounted by several floors for shipment, receipt and storage of freight. Tenants of buildings as far west as Fourth street could have access to the river front over elevated runways and bridges, connecting through from Fourth street to the river front.

The lower floor on the wharf could be used by trucks. The next floor, level with the elevated structure, would be served by railroad tracks. All floors would be served from the river by means of elevators and hoists.

The upper floor or roof of the structure could be built level with the upper roadway of the Eads Bridge and serve as a river front plaza between the Eads and Municipal bridges.

ELECTRIFICATION

The electrification of the St. Louis terminals of the Terminal Railroad Association was studied in 1911 by a Committee on Terminal Railroad Electrification of the Civic League of St. Louis consisting of:

Prof. A. S. Langsdorf, Acting Chairman.
Jos. R. Barroll, House Manager, Butler Bros.

V. W. Bergenthal, Assistant Sales Manager, Wagner Electric Manufacturing Company.

Hanford Crawford.

H. N. Davis, President, Smith-Davis Manufacturing Company.

Dr. W. E. Fischel, Physician.

Daniel N. Kirby, Nagel & Kirby, Lawyers.

R. H. Phillips, Consulting Engineer.

J. J. Wertheimer, President Wertheimer-Swarts Shoe Company.

J. L. Van Ornum, Professor Civil Engineering, Washington University.

Pertinent extracts from that report are as follows:

"The chief difference between the New York situation on the one hand, and that in Chicago, Boston and St. Louis on the other, is that while electrification was forced in New York by the existence of the tunnels, no such reason exists in the other three cities. If the Boston terminals should be electrified, it will be brought about largely because of a proposed tunnel to connect the North and South Stations. The arguments advanced in favor of electrification are based almost entirely upon the freedom from smoke that would come with it and the greater comfort and convenience of the traveling public.

"It may be contended that the Eads Bridge would be much more useful if the tunnel forming part of its western approach were electrified. This is quite true, but the contention is not in itself a sufficient reason for the electrification of the entire terminal system; the St. Louis tunnel is not vital to the system in the same sense as are the New York tunnels. Briefly, increased value of the St. Louis tunnel would follow as one of the benefits of general electrification; it is not an impelling cause."

Quoting from the Boston report the Committee said:

"If the terminals only of a steam railroad are electrified, and the steam locomotives are run to the limit of electrification, the only change is that, instead of running into the terminal station, the steam locomotives are disconnected a few miles outside. The electrification of the terminal, therefore, does not very much decrease the expense of steam operation, but adds the expense of electrical operation. In such a case it is not so much a question of steam vs. electricity, but rather a case of steam vs. steam plus electricity; and it may be a measure of economy to extend electrification to a still greater distance from the terminal, because by such extension a saving can be effected in the operation by steam."

"It is exceedingly desirable that the principal grade crossings should be eliminated before electrification is carried out. If they are not eliminated, additional expense and waste will be incurred if the large expense of electrification precedes the elimination of these grade crossings, which is sure to follow in the not distant future."

Referring to smoke control the Committee said:

"It is generally conceded that electrification is the only complete solution of the problem of eliminating locomotive smoke, but it is nevertheless a fact that fuel-burning locomotives may be so handled as to considerably reduce the volume of smoke and cinders ordinarily emitted, even when the fuel is bituminous coal. Experiments with different types of mechanical stokers and other smoke-prevention devices indicates that thus far the most effective smoke-preventer is an intelligent fireman. Several of the railroads have instituted a systematic campaign for the education of the firemen, with gratifying results, in minimizing smoke and in saving of fuel. In the absence of electrification, it would appear to be perfectly reasonable to require the railroads to reduce their contribution of about one-third of the City's smoke by enforcing active measures along these lines."

The Committee estimated the cost of electrification of 262 miles of Terminal Railroad tracks at \$65,300 per mile in 1911.

Including the mileage of all lines at the present time at prices that may be expected for a

long time in future, the cost of electrifying all railroads within the St. Louis-East St. Louis terminal district would be so great that it is financially impracticable. Neither does it seem to be necessary as a smoke prevention measure.

It is possible that if air rights be developed over a suburban passenger station or over freight stations, the operation of the tracks under such stations and the approaches thereto may require electric locomotives, but that is the limit to which electrification would be justified.

Investigations and Conclusions as to Electrification in Chicago

The necessity, possibility and practicability of the electrification of railway terminals in Chicago was thoroughly investigated by a technical staff for the Chicago Association of Commerce Committee of Investigation on Smoke Abatement and Electrification of Railway Terminals. The investigation consumed four years and cost about \$300,000.

The personnel of the Committee follows:

John J. Bernet, vice-president, New York Central Lines.

Paul P. Bird, of the firm of Norton & Bird, Consulting Engineers; formerly Chief Smoke Inspector, City of Chicago.

Joseph H. Defrees, of the firm of Defrees, Buckingham & Eaton, attorneys-at-law.

Charles L. Dering, president, the Chicago Association of Commerce; manager the S. C. Scheneck Company, Coal.

Thomas E. Donnelley, president, R. R. Donnelley & Sons Company, Printers; formerly chairman Smoke Abatement Commission of Chicago.

Howard Elting, of the firm of Adams & Elting, Manufacturers and Wholesalers of Paints.

William A. Evans, professor of Sanitary Science, Northwestern Medical School.

Milton J. Foreman, of the firm of Foreman, Levin & Robertson, Attorneys-at-Law; formerly chairman Committee on Local Transportation, City Council, Chicago.

William A. Gardner, president, Chicago & Northwestern Railway.

William F. M. Goss, dean of the College of Engineering of the University of Illinois.

Ernest R. Graham, of the firm of Graham, Burnham & Company, Architects.

Richard C. Hall, Western selling agent of the United States Rubber Company.

Howard G. Hetzler, president, Chicago & Western Indiana Railroad and the Belt Railway Company of Chicago.

Hale Holden, president, Chicago, Burlington & Quincy Railroad.

Jesse Holdom, Judge of the Circuit Court of Cook County, Illinois, and Justice of the Illinois Appellate Court.

Eugene U. Kimbark, vice-president and manager, the Paper Mills Company.

Darius Miller, president, Chicago, Burlington & Quincy Railroad.

Frederick H. Rawson, president, Union Trust Company.

Harrison B. Riley, president, Chicago Title & Trust Company.

Charles E. Schaff, president, Missouri, Kansas & Texas Lines; formerly vice-president New York Central Lines.

John W. Scott, of the firm of Carson, Pirie, Scott & Company.

Francis T. Simmons, president, Francis T. Simmons & Company.

Mason B. Starring, president, United Railways Investment Company.

Harry A. Wheeler, vice-president, Union Trust Company.

The report of the Committee, dated November 22, 1915, is contained in a volume of about 1,200 pages, published by Rand-McNally and Company.

The Committee adopted two very important conclusions as follows:

"The complete elimination of steam locomotives from the railroad terminals of Chicago, as a means in smoke abatement, is not, under present-day conditions, necessary.

"The complete electrification of the railroad terminals of Chicago as a betterment to be brought about by the railroads through the investment of free capital is, under present-day conditions, financially impracticable."

As railroad conditions in St. Louis are so similar to conditions in Chicago the entire conclusions of the Committee may be applied to the St. Louis situation. As these conclusions are briefly summarized in the report they are repeated here as applicable to St. Louis.

Summary of Conclusions with Reference to the Electrification of Railroad Terminals in Chicago

"The purpose of the Committee: The purpose for which the Committee was organized

was early defined as embracing a determination as to:

"1. The necessity of changing the motive power of steam railroads to electric or other power;

"2. The mechanical or technical feasibility of such a change;

"3. The financial practicability of such a change.

"The Necessity of Changing the Motive Power of Steam Railroads to Electric or Other Power: In its efforts to reach a just decision with reference to the necessity of changing the motive power of steam railroads to electric or other power, the Committee, aided by the active co-operation of many different agencies, has concluded an elaborate research concerning the consumption of fuel and the origin of smoke in the city of Chicago. This research has covered coal deliveries, reshipments of coal and changes in amounts of coal stored within the Area of Investigation during the calendar year of 1912. The statistics gathered show the origin of all fuel delivered and the service in which it was used.

"The investigations have shown that the various activities of Chicago require the use of enormous quantities of fuel; that the per capita consumption is greater than that of most other cities; that the amount consumed by steam locomotives is less than a third of that burned under high-pressure steam boilers, one-half of that which is consumed in domestic heating, much less than that used in manufacturing fires, and but a small fraction (12 per cent) of the total burned by the combined fuel consuming industries of the city.

"The Committee has analyzed the characteristics of Chicago's fuels and considered the means which may be best employed in utilizing the city's fuels; it has shown that Chicago's problem in smoke abatement is difficult, because the fuels tributary to Chicago, being high in volatile matter, are of a class usually designated as 'smoky.'

"The Committee has studied the composition of the atmosphere of Chicago, the effect upon its purity of the smoke discharged and the extent to which it is polluted by foreign material not of fuel origin.

"The investigation has shown that smoke in the atmosphere presents three principal aspects, namely, visible properties, solid constituents and gaseous products. It has shown that hitherto emphasis in smoke abatement has been given to smoke in its visible aspects, whereas it appears that the solid constituents of smoke are more important agencies affecting

atmospheric pollution. It has shown also that gaseous products of combustion are important polluting agencies only with reference to their sulphurous constituents, and that the amount of sulphur in smoke is dependent upon the amount of fuel consumed and may be accepted as being independent of the particular service in which it is burned.

"It has been made apparent that no single fuel consuming service nor single locality is alone responsible for the smoke of Chicago, but that all fuel consuming industries and all localities produce smoke.

"The research has demonstrated that the elimination of the steam locomotive from Chicago will involve the electrification of the city's railroad terminals, since there is no other known form of motive power which can be accepted in all the services of the terminals as a substitute for the steam locomotive. It has further demonstrated that electrification implies increased capacity of existing electric generating stations or the introduction of new stations which must be steam-driven, either of which expediences means new sources of fuel consumption and smoke; and that the net effect of electrification upon atmospheric pollution will be represented by the difference between the amount of smoke now discharged by steam locomotives and the amount which, under electrification, will be discharged from the electric generating stations.

"The study has shown that the elimination of all steam locomotives from the city of Chicago would reduce the amount of visible smoke entering the atmosphere by approximately one-fifth the present amount; that it would reduce the dust and dirt content and the sulphurous content of the atmosphere of the city as a whole by a relatively small amount; and that as a consequence the locomotive is not at present a controlling factor as a source of atmospheric pollution.

"The observations of the Committee, confirmed by the records of Chicago's department of smoke inspection, are to the effect that great progress has in recent years been made in reducing locomotive smoke and that maximum results have not yet been obtained. Hence it cannot be urged that, with reference to smoke abatement, the steam locomotive service is an unmanageable service.

"The investigations do not support the contention that elimination of steam locomotive smoke is a necessary next step in the city's progress in smoke abatement. They show, on the contrary, that before the complete elimination of steam locomotive smoke can be regarded as imperative, smoke from all existing

sources should be reduced to a minimum, and that to this end some of the city's more obvious undertakings should be:

"1. The extension of the operations of Chicago's department of smoke inspection over the entire area of the city, instead of confining them to a selected portion of this area.

"2. A material extension in the character of the city's activities in smoke abatement to the end that they may include such work of research and instruction as will make the city co-operatively helpful to coal consumers in the development of a constructive policy in smoke abatement.

"3. A reduction to a minimum of all smoke discharged within the city, whatever its source.

"4. Recognition by the city that smoke is not the only source of atmospheric pollution, that the dirt of the atmosphere is in part the result of imperfect cleaning processes, and that the whole problem of municipal housecleaning must be developed to a high state of efficiency before the complete elimination of the steam locomotive for the purpose of reducing atmospheric dirt can be justified.

"The Committee is not unmindful of the advantages which, in addition to those which would attend the abatement of smoke, would accrue through the electrification of Chicago's railroad terminals. It is not unmindful of the desire of certain portion of the traveling public to bring about the electrification of particular services of the individual roads. Its problem, however, as originally outlined, was that of determining the necessity for the electrification of all roads and all services within the city as a means of abating the smoke of the city. The conclusion of the Committee, based upon the facts of record, is to the effect:

"That the complete elimination of steam locomotives from the railroad terminals of Chicago, as a means of smoke abatement, is not, under present-day conditions, necessary.

"The Mechanical or Technical Feasibility of Electrification: In its study of the technical feasibility of electrification the Committee has made a world review of undertakings involving the electrification of steam railroads. It has studied the terminal situation in Chicago for the purpose of establishing a relation between that which has already been accomplished and that which will need to be done if Chicago's railroad terminals are to be electrified. It finds that experience elsewhere has demonstrated that:

"1. Trains of any weight can be hauled electrically at any necessary speed, provided sufficient electric power can be conveyed to the train motors.

"2. Where appliances can be properly in-

stalled and maintained electric traction is reliable.

"3. Electrification introduces an added hazard incident to railroad operation, but to what extent is indeterminate. The returns from railroads electrically operated make it clear, also, that it introduces compensating influences which apparently equalize whatever additional hazard electric operation may involve.

"It finds also that electrification has proceeded, with reference to different railroad services, along lines as follows:

"1. Electrification has most frequently been employed in operating suburban passenger service.

"2. It has been used for all passenger service in connection with the intensive development of great passenger terminals, where underground operation has been involved.

"3. It has been used for both freight and passenger operation in tunnels.

"4. It has been applied to sections of through lines of routes to improve operation of both freight and passenger service on difficult grades.

"5. It has been applied to sections of through route lines in anticipation of operating economies through the utilization of water or other relatively inexpensive centralized power.

"6. It has been employed by a single railroad in this country in the operation of three switching yards, the work of which must still be regarded as being in an experimental stage.

"The demonstrated facts disclose the existence of a wide gap between that which has been accomplished and that which must be done to meet all the various conditions presented by the proposed electric operation of the Chicago terminals. This is because:

"1. Progress in the development of electric installations has thus far not resulted in the adoption of standards governing the electric system to be employed, the design of equipment or the methods of operation. The electrification of Chicago's railroad terminals would, therefore, involve definite decisions with reference to many features for which there are as yet no approved standards.

"2. The Chicago terminals involve the interests of many railroads, whose joint action is essential to a satisfactory technical development of the problem. The fabric of electrification must be designed to meet the requirements of the entire terminal rather than those of any single road.

"3. The Chicago terminals include both railroads having their entire mileage within the city and the railroads operating continental lines, and possessing a terminal interest only in the city. Electrification of the lines wholly within

the city would affect their entire trackage and would mean, practically, reconstruction. Electrification of through lines implies the development of a local improvement. The methods by which roads sustaining widely diversified interests would seek to accomplish their work of electrification would involve technical as well as business procedures.

"It has been shown to be technically feasible for each individual road in Chicago, for any group of such roads or for all such roads acting in common to provide for the generation and distribution of power to predetermined points of consumption along the rights-of-way of railroads.

"It has been shown to be technically feasible for each individual road in Chicago, for any group of such roads or for all such roads acting in common to secure through purchase the energy they require, delivered at predetermined points of consumption along the right-of-way.

"Electrification implies the establishment of some form of contact system along each line of railroad track, whereby energy may be delivered to the rolling equipment. A study of track and operating conditions reveals the following facts:

"1. A limited mileage of track in Chicago (approximately one per cent of the total) cannot be equipped with any system of contact which could be accepted as satisfactory for the terminal as a whole. The electrification of this trackage as a part of a general system of electrification is, therefore, assumed to be not technically feasible.

"2. While the third-rail system of contact might be extensively used in Chicago, there are, at intervals throughout a considerable percentage of the total trackage, conditions which would make difficult the use of this form of contact. The third rail is applied with difficulty wherever special track work abounds, where street and railroad crossings occur at frequent intervals, and in switching yards. In locations where employees must be between or must cross tracks, as in freight yards, it constitutes a physical obstruction which is highly objectionable. For these reasons the third rail is not considered feasible for general use in the Chicago terminals.

"3. The facts developed show that any form of overhead contact which can be placed high enough above the rail to give the clearance necessary to permit men to ride and perform necessary duties on the tops of freight cars is not objectionable, from a technical point of view. The application of an overhead contact system to the terminals of Chicago will, however, require the contact wire to be lowered in many places in order that it may pass under struc-

tures presenting minimum clearance. The great number of points at which the contact wire must be lowered will require the installation of many warning devices or the enforcement of rigid rules governing the presence of trainmen on tops of cars.

"The adoption of an overhead contact system will permit the use of either of the so-called high voltage direct current or of alternating current at much higher voltage. The purposes of electrification can be accomplished through either of these means.

"The Committee finds that the use of direct current by the railroads of Chicago would involve careful designing and construction to avoid the introduction of difficulties arising from electrolytic action. While the questions of standards to be observed in this respect are as yet undetermined, it is believed that difficulties arising from this source are not such as to affect the feasibility of any general plan of electrification which may involve the use of direct current.

"It finds that the use of alternating current by the railroads of Chicago would involve careful designing and construction to avoid inductive interferences with existing telephone and telegraph circuits. While the means to be employed in preventing and overcoming such disturbances are not yet standardized, it is believed that the difficulties to be experienced from this source are not such as to affect the practicability of any general scheme of electrification involving the use of alternating current.

"The general conclusion of the Committee concerning the technical feasibility of complete electrification of Chicago's railroad terminals is to the following effect:

"1. The launching of such an undertaking, to be participated in by all the railroads at practically the same time, will involve a large amount of experimentation.

"2. The problem of contact design, when considered in relation to normal railroad operation, presents many difficulties. A limited amount of trackage in the Chicago terminals is so located that it has been found impracticable to equip it with any form of contact system. Operation over such trackage subsequent to electrification will need to be conducted by some form of self-propelled unit or there must be some rearrangement of tracks. The difficulties imposed at numerous points by insufficient clearance of overhead structures will, under the plan of the Committee, be met by the installation of warning devices or the enforcement of regulations governing the presence of trainmen on tops of cars.

"3. The technical difficulties to be met and overcome in bringing about the complete elec-

trification of Chicago's terminals will, through the general development of the art, diminish year by year.

"The Financial Practicability of Electrification: In its consideration of this aspect of its problem, the Committee has made a detailed study of the work which will be necessary to bring about the complete electrification of Chicago's railroad terminals. It has fixed the limits to be observed by each railroad in the development of electric operation. It has determined the amount of equipment which will be required, has designed contact systems, and has proceeded, in all important respects, by methods which would be necessary if electrification has been definitely determined upon. By such a process the cost of complete electrification has been estimated.

"Studies have also been made to determine the operating results which would follow complete electrification of Chicago's railroad terminals, in order that profits and other forms of benefits which might be derived from such a change may be known.

"With the data thus obtained, concerning the extent of the investment which must be made and the returns which may be expected as a result of such an investment, the Committee concludes that:

"The complete electrification of the railroad terminals of Chicago as a betterment to be brought about by the railroads through the investment of free capital is, under present-day conditions, financially impracticable.

"Careful consideration has been given to

proposals contemplating municipal co-operation with the railroads in bringing about complete electrification of their terminals, with the conclusion that:

"Any procedure designed to bring about the complete electrification of Chicago's railroad terminals, which is based upon a financial program involving municipal co-operation is, under the present state constitution, impossible.

"The Committee has considered whether the funds necessary for the support of the investment which must be made to bring about complete electrification might not be provided through the application of an arbitrary charge or tax whereby the railroads might develop added revenues, with the conclusion that:

"Any procedure designed to bring about the complete electrification of Chicago's railroad terminals which is based upon the application of an arbitrary tax to the traffic of Chicago, will constitute a tax which must be borne, directly or indirectly, by the business interests of the city. The practicability of such a tax is a matter which has not been studied by the Committee.

"Emphasis must be given to the fact that the Committee's conclusions as to financial practicability apply to the complete electrification of Chicago's railroad terminals. The financial practicability, under present-day conditions, of electrification as it might be applied to individual roads, or to single services of individual roads, is a matter which has not been investigated by the Committee and concerning which no opinion is expressed."

UNIFICATION OF RAILROAD TERMINALS

General Discussion

For some years there has been considerable discussion about the joint use of railroad freight terminal facilities which has led to numerous proposals for "Unit Operation" or "Unification" of facilities. The proponents and advocates of the idea point out that the present system of individually owned railroad terminals results in unnecessary duplication of facilities and service in the most congested portions of the railroads where the investments are greatest.

Passenger facilities have been unified already to a great extent, especially in the large cities where groups of roads use Union Stations, in many cases all roads using a single station, as at St. Louis and Washington, D. C.

The present system of development of freight facilities has been correctly referred to as the "Competitive" system; the proposed system, the "Co-operative" system. Under the present system terminal facilities are usually provided by individual railroads for their exclusive use. Under the proposed system terminal facilities would be thrown together for common use by such railroads as could make the most use of them and profit most by their use. Future facilities would be provided for the joint use of all railroads, or by a terminal company controlled by all.

There are many exceptions to the competitive or individually owned system of railroad terminals, the most notable being the Terminal Railroad Association of St. Louis and its affiliated companies, controlled by fifteen trunk lines and operated in the equal interest of all railroads in the St. Louis-East St. Louis Terminal District.

Even here, however, the individual railroads, including those in control of the Terminal Railroad Association, have also provided terminal facilities of their own.

Mr. H. J. Pfeifer, Chief Engineer of the Ter-

terminal Railroad Association of St. Louis, in a paper appearing in Bulletin No. 213, January, 1919, American Railway Engineering Association, describes the function of a unified terminal as follows:

"In a system of completely unified freight terminals the control by an individual railroad over its inbound freight train ceases with its delivery on a receiving track in an assigned yard, within the terminal limits, and does not begin over its outbound train until it is built up complete in readiness for road movement; all intermediate service of every nature is performed by the terminal organization. It can readily be seen that the more railroads there are, and the greater the extent of the industrial district served, the greater and more complicated is the service to be performed."

The proposals for unification or consolidation of facilities have run all the way from the mere joint use by more than one railroad of certain facilities that have sufficient capacity to accommodate other business than that of the owner to a complete consolidation of all railroad facilities within a terminal district under one company.

The latter plan has been given very careful study by the Chicago Railway Terminal Commission; its most ardent advocates were the late John F. Wallace, well-known railroad expert, for many years chairman, and Walter L. Fisher (formerly Secretary of the Interior), for many years General Counsel of the Commission.

The following extracts from an address delivered by Mr. Wallace before the United States Chamber of Commerce at Chicago, April 11, 1918, will be of interest:

"The Terminal problem is really the big problem of our railroad transportation system, and its solution will automatically solve most of our transportation complexities.

"While the total mileage of terminal tracks may not be too much, and in certain localities may even be insufficient, the remedy lies not entirely in additional tracks and facilities, but in a correlation and readjusting of existing

facilities, and the operation within the terminal zone along lines that will secure the maximum of efficiency.

"Viewed from the standpoint of delays, the railway terminal becomes even a larger factor in the transportation problem. The average freight car travels about twenty-five miles a day. The average speed of a freight train between terminals is ten to fifteen miles an hour. It is therefore evident that the average freight car spends twelve hours in the terminal for every hour it spends between terminals.

"Since the remedy—whatever it may be—will eventually be applied by Congress, it is highly important that the general public comprehend the fundamentals of the present transportation situation and the general nature of the changes in operation and control necessary to bring about a more efficiently operated transportation system.

"These changes will necessarily be of two kinds: First, physical changes in terminal facilities; and, second, changes in method of operation.

"The interchange freight should receive first consideration. It frequently happens that a car of commodities consigned from a point in the West to a point in the East is handled successively by several railroads, and at every place where it passes from one railroad to another it goes through a terminal, often passing through the hands of an intermediate company, occupying space in several railroad yards, congesting interchange tracks and encountering days of delay.

"The remedy for this condition is more direct routing—and a routing that will pass the car around rather than through the larger railroad terminals. Under present practice, a car may be handled miles out of its direct course to destination in order to give a greater mileage to a preferential railroad. Frequently the shipper is equally guilty with the railroad for this condition. The interest of economy demands that the car should pass in as direct a line as possible and with a minimum of delay from point of origin to destination over the most economical route.

"To inaugurate unified operation it should be possible to provide that each railroad terminal zone should be operated as a unit by one local manager. This local manager should take over all of the railroad facilities within the terminal zone and handle all the traffic therein.

"Railroads entering the terminal zone should turn over their traffic to the local manager at points designated by him, and he should proceed to handle this traffic to its destination within the terminal zone along the most direct

and economic routes and with a minimum of switching and delays. Originating traffic should be handled in the same way."

This subject was gone into quite thoroughly in May, 1921, at a series of hearings before the Interstate Commerce Commission on the application of the New York Central for a certificate of public convenience and necessity to authorize it to acquire certain control of the Chicago Junction Railway, a terminal and industrial switching road.

After cross-examining numerous railroad men experienced in railroad terminal operation and familiar with the Chicago terminal situation, Mr. Fisher set his conclusions down in the form of a question, which he propounded to several of the witnesses as follows:

"Suppose all the railroad terminals in Chicago Terminal District, except car yards, engine houses, etc., essential to trunk line operation, were turned over to a single terminal company under a perpetual lease, providing that the net profits of the terminal company were to be paid to the railroads so turning over their terminals, each of such railroads receiving the same proportion of the net profits as the value of the property turned over by it bears to the value of the total terminal property so turned over. The terminal company to operate the terminal as a whole, so as to produce the greatest efficiency and economy of service to avoid duplication of facilities or service, to develop terminal properties intensively, and release from railroad use all properties now held for competitive reasons but no longer necessary.

"The terminal company would not necessarily handle all freight within the terminal area with its own power as a switching service, but would continue such direct movement of freight by the trunk lines under the power of the trunk lines to and from industries, industrial districts, freight houses or team tracks as can be moved more efficiently and economically in that way; but even this movement would be routed and handled in the most direct and least congested routing without regard to the ownership of the rails. The rates for all such terminal service would be so revised and fixed by the I. C. C. as to give to the terminal company a return as favorable as that allowed to trunk line carriers generally."

On this issue the majority decision of the Interstate Commerce Commission contains the following observations and conclusions:

"Much testimony was adduced at the hear-

ings, and divergent opinions were expressed, as to the relative merits of co-operative, singly controlled and independently controlled terminals. That discussion need not be reproduced here. The policies and plans of the city with respect to the general terminal situation have not yet fully developed, and it is obviously impossible for anyone to determine at this time the ultimate goal which ought to be attained. It is believed, however, that pending final determination of future policies, the greatest good can be attained by the continuance, for the time being, of the competitive terminal situation. This can be best accomplished by bringing the present neutral Junction properties into closer relation with a trunk line like the Central. The Central's terminal facilities are relatively inadequate as compared with the competitor eastern trunk lines, but the Central controls extensive facilities for classification and interchange which are complementary to the Junction properties. The stronger competition and the connection between the Junction properties and the Harbor Belt facilities which would thus be brought about, would not only insure to the shippers of the Junction the necessary expansion and elasticity of facilities, together with the assistance of an interested trunk line in times of car shortage, and other emergencies. . . ."

The Committee on Railroad Terminals of the National Conference on City Planning, presented at the Cincinnati Conference in 1920 certain general considerations which will be repeated here for the purpose of presenting the views of expert City Planners on this subject.

"1. Unified control and operation of all standard railroad lines, within the limits of any city, is essential to the requirements of modern business and to the convenience of the public. It should be brought about with as little delay as possible, at the same time providing opportunities for expansion both of trackage and terminals in connection with a well-considered plan of city development. Means should be found and taken for persuading or compelling all railroads entering the city to connect up with such a unified system at the city limits. The entire question of railroad service should be considered as a whole, not with relation to one system or one part of the city only.

"2. The present wasteful and needless duplication of lines and terminals inside of city limits cannot be permitted to continue. Many cities can show millions of dollars spent in unnecessary duplication of passenger stations when the same sums expended in added industrial lines would have increased both the business of the carriers and the prosperity of the

city. This is a useless drain on the railroads, resulting in additional cost of operation, for which the public pays. It is needless inconvenience to the public which can be remedied at comparatively small cost by proper co-operation in planning by both the city and the railroads. Voluntary action on the part of one road is not to be expected and generally impracticable. The city, with the aid of the state or national government, holds an advantageous position to undertake bringing the railroads together for such intra-city unification.

"3. All shippers within the city should be free from dependence on one road for cars. In some cities shippers now have to maintain needless additional warehouses on a second line in order to insure prompt delivery of cars on the first line. This is a wasteful expense which must be added to the cost of shipping and doing business, particularly where a perishable product is involved.

"4. All spurs and industrial tracks within the city limits should be "common user" tracks, served by a belt line connected with all main lines entering the city, a fair pro rata return being made to the original owner of each line for such use.

"5. Municipal ownership of intra-city lines is probably not necessary, provided there is unified control. Expansion of existing terminal companies, quickest and easiest method of accomplishment, unification in most cities. New trunk lines should be allowed to hook on to the city terminal lines at the city limits, at any time in the future. This would provide for competitive lines through the country without cutting the city into further pie-shaped sections or causing further blighted areas to property within a block or two of each side of the railroad right-of-way through a city, as at present.

"6. Provision of complete modern business facilities is essential to all industries. Railroad service, while important, is not the only one of these facilities necessary. Protected industrial districts or zones appropriately and conveniently situated, free from hampering residential requirements, with wide heavy hauling pavements, high pressure fire protection, extra large sewers for industrial wastes, etc., as well as unlimited spur tracks, are necessary in any city of consequence, and many of the progressive cities of the country have already established such zones. The fullest co-operation between the city and the railroad is necessary to make the facilities in these zones most useful in the development of business. Once such zones are established both railroads and shippers can feel safe in concentrating large investments for permanent ultimate service, not otherwise justified.

"7. One of the greatest opportunities for railroads to cut down expenses and freight rates is by simplification of terminals. On most of the big roads it costs as much to get a car of freight out of the city limits as it does to haul it 250 miles or more on the main line. Some roads report as much as 35 per cent of their total freight cost in handling terminals (from reports of the O. W. R. & N. Railroad to Oregon Public Service Commission). This is by far the biggest single item to the railroads in their cost of doing business. A small saving, therefore, in terminal handling should effect a considerable amount of saving in freight cost and should be welcomed by railroads and shippers alike.

"8. Whatever the origin or destination, a merchant or manufacturer should be able to receive and ship at the freight station which entails the shortest team haul.

"9. Adequate expanded classification and freight yards must be provided in every city as part of its future plan as an adjunct of industrial development. These yards should have long areas uninterrupted by grade crossing preferably located at one side or on the outskirts of the city, away from the probable expansion of business and main street traffic lines. Main railroad lines should be diverted around the city, and outside the city limits, wherever practicable, so that through freights and other through trains need not pass through the congested parts of the city. In light of the development of modern street transit, consideration should also be given to the possible advantages of relocating main passenger and freight stations away from the congested districts.

"10. In cities which have water-borne commerce, whether coast or inland ports, rail and water terminals should be considered as a single rather than as separate problems; co-ordination of facilities for both methods of transportation should be insisted upon in the interest of the public and of the carriers themselves.

"11. The relation of the railroad to the street system of the city should be carefully worked out. The value of the railroad to the prosperity and the very life of the city should be recognized. Wide heavy hauling pavements to freight terminals, docks and the industrial zones are equally essential and form a natural and important complement to the greatest use of railroad facilities. Direct and amply wide traffic thoroughfares should lead to all principal passenger and freight stations.

"12. The elimination of grade crossings on both steam and electric rapid transit lines is essential to public safety and convenience, to prevent the interruption of traffic and for the

proper conduct of business. The problem of grade crossing eliminations should be studied in the most comprehensive way and not in a piecemeal fashion, even though the execution of the work is to be carried out gradually.

"13. The fullest co-operation should be given cities by the railroads in planting and improving the appearance of borders of rights-of-way, yards, bridges, viaducts, stations and terminals within the city limits. Much of the present damage to adjacent property values and rentals can be done away with in this manner, at reasonably small expense, by closer working together of railroad officials, park boards and other city officers.

"14. These fundamental considerations in the relation of railroads to city development we respectfully commend to railroad officials, city plan commissions, State Public Service Commissions, and to the distinguished members of the Interstate Commerce Commission, with the conviction that the grave questions of economy and public policy involved merit their fullest concurrence and co-operation."

The Committee on Yards and Terminals of the American Railway Engineering Association has for some years been engaged in a study of the extent to which unit operation of railroad terminals, in large cities, is feasible. Comments of the Committee published in Bulletin 213, January, 1919, are as follows:

"Definition—Unit operation of railroad terminals contemplates such modified control and use of individual organizations and properties including physical changes therein as will serve the transportation purposes of the terminal district, considered as a unit, with the greatest expedition and economy.

"The railroads of the country have been likened to a broad, deep canal, ample to bear all commerce which it may be desired to carry upon its surface; and the terminals, to locks, which possibly are neither so wide nor so deep, and whose operation requires time, so that the capacity of the system is limited by the capacity of the locks.

"It is necessary then, in order to make congestion as slight as possible, to concentrate endeavor upon the locks—the terminals.

"It is evident that if the terminals are kept open, the whole system may be kept in motion.

"The most effective cure within the terminal is the adoption of good methods and practices of operation in a system of terminal facilities constructed or reconstructed upon a comprehensive plan developed to best fulfill the requirements of each particular situation.

"At some cities or terminals, while pronounced benefits and advantages may be se-

cured by pooling or unifying existing facilities, etc., it may be that the situation demands such relief as can be made effective only by large capital expenditures and the obliteration of exclusive interests, attended by extensive retirements, modifications and additions of facilities.

"In such a case, where it can be foreseen that a plan of this kind would prove justifiably and permanently advantageous to the movement of traffic, the solution would seem to be the surrender of individual properties and the merger into a terminal company or association of all facilities in the terminal zone.

"It is the earnest thought that each situation should be thoroughly studied, and a comprehensive plan developed for each, before any extensive physical change be undertaken, and that either small or important changes which are made should be in line of development of the ideal plan.

"In the operation of the unified facilities, the load should be distributed evenly among all units so as to secure their constant normal use at the most intense efficient rate, coupled with avoidance of any excess peak load on any unit, treating both the individual carrier's terminal and the unified terminal always as a part of the railroads as a whole."

Some of the principles adopted by the Committee are as follows:

"(1) A terminal is a clearing point and not a storage point for cars.

"(2) Each and every facility within the unified terminal limits must be considered absolutely a part of the whole plant.

"(3) The use of each individual part must be co-ordinated so as to obtain the best use of the plant as a whole."

The Committee referred to has not yet adopted detail recommendations for the unification of railroad terminals, but by means of a catechism had adopted 57 questions which it is intended railroad operating officials shall inquire of their own organizations to indicate the extent to which improvements may be made. This catechism is quite comprehensive, and is recommended to the earnest study of the railroad officials. It will be found on pages 164 to 172, Bulletin 213, January, 1919, and appears in volume 20 of the Proceedings of the American Railway Engineering Association.

This subject has also been given much study by Mr. F. H. Lee, Vice-President and Chief Engineer of the Chicago & Western Indiana

Railway Company, and the Belt Railway of Chicago, which operates the large clearing yards. Mr. Lee has been associated with the Belt Railway of Chicago for many years, and is an eminent authority on the subject of terminal operation. The following extracts from a paper prepared by Mr. Lee for presentation to the Yards and Terminals Committee of the American Railway Engineering Association in 1919 indicate the result of his experiences in Chicago:

"It will doubtless be conceded that the facilities of the railroads are relatively much greater for handling traffic outside the more important terminals than within them, and therefore the inference seems plain that in order to secure the maximum improvement, any measure looking toward an increase in their capacity for handling traffic should be directed toward the terminals rather than toward the open country lines.

"Of the requirements mentioned as fundamentally necessary for the efficient manufacture of transportation only one remains, viz., good methods and practices. It is just here in the view of the writer, that important changes and improvements may be made which will quite radically improve the efficiency of the railroads as a whole, because they will reduce congestion in the terminals, this being, as already stated, the chief enemy to transportation efficiency as a whole.

"Congestion is defined as a condition of undue pressure, a state of unnatural crowding; and congestion on the railroads, like congestion in the body, is a disease which interferes with the normal functions, and is to be reduced by the use of various devices and means adapted to remove the undue pressure in the parts affected. Two of the principal causes of congestion in terminals, which in turn act in a vicious circle with congestion itself, each to cause the growth of the other, are dead time and the rehandling of cars. It is safe to say that any method or practice which secures the maximum reduction in dead time, and in the rehandling of cars, will also secure maximum reduction in the congestion of terminals, and therefore maximum increase in the efficiency of the railroads of the country as a whole.

"For the purpose of this discussion, dead time is limited to and may be defined as time spent by the train crew after an engine has been manned, in getting out of the round-house, pulling up to and coupling onto the train, testing the air, etc., at the outgoing end of the trip; time lost in setting out and picking

up; and time spent in putting away the train, with the various similar attendant operations at the incoming end. This so-called dead time thus defined is to be distinguished from time spent in actually passing over the road. Its serious effect in terminal operation is not generally appreciated.

"An investigation made by the writer some years ago, which is believed to have been reasonably accurate, disclosed that in an actual case under ordinary conditions and where no undue congestion existed dead time as above defined consumed 65 per cent of the total service time of all transfer trains.

"Certain principles follow with the reasons therefor which are believed to be particularly applicable to terminal transfer railroads which operate trains with their own power and crews, although some of these principles are of more general application.

"The operation of transfer railroads should usually be restricted as much as possible to the transfer of cars as distinguished from the classification of cars. It follows that the through line should so far as practicable deliver its cars to the transfer line classified and straightened out into cuts for the various through lines, to which deliveries are to be made by the transfer line for through line account. Such a transfer railroad as is being considered may be compared to a throughfare connecting two camps or cantonments. It may be of ample width to handle all the travel between them, if team and foot travel is kept moving in column formation, at fair speed, and without unnecessary steps, columns having been formed in the streets and areas of the cantonments themselves. But if the thoroughfare is used as a drill ground, for the formation of columns, or as a recreation area, its capacity may be reduced to the vanishing point. The main tracks of most transfer railroads are ample for a larger volume of traffic than is handled over them, but in times of congestion they are frequently blocked at junction points, yard entrances and connections by trains which are unable to get into yards by reason of their crowded condition. These yards in turn are congested by an oversupply of cars awaiting classification, which occupy room which should either be reserved for the receipt of main line transfer trains or which should be kept for the classifications which are necessary and which cannot be made to advantage elsewhere.

"It should be observed that where through lines make direct deliveries to each other, they classify cars straight for the various railroads as a matter of course. There seems no good

reason why when delivery is made through the agency of a transfer line the through line should not continue to make the required classifications, at least to a reasonable extent. In so far as the through business is concerned, it is believed that the practice of considering and using the transfer line as an agency for both classification and transfer, instead of restricting its use so far as practicable to the transfer of cars, is responsible for much of the congestion of terminals. The present practice has been the growth of years. Until recently the transfer railroad depended upon the through lines for much of its business, and felt in no position to object to the dumping of business upon it regardless of congestion or of how badly the deliveries might be mixed. Under the old conditions the responsibility of the through line ceased once it had delivered its cars to the transfer or belt line, and every effort was accordingly made (the more congestion increase, the more strenuous the effort) to unload on the transfer line, regardless of ultimate consequences, thus "shifting responsibility.

"This preliminary classification could be made with little or no additional expense by the through line, because it must in any event switch out many cars, such as bad orders, holds, and those for other deliveries. Also a considerable amount of this preliminary classification could be done to advantage at the division yards of the through line beyond the large terminals.

"Where transfer or belt roads are of considerable length and where equipped with motive power to handle transfer trains, it is the better practice to keep foreign engines off the belt line, performing the transfer service with belt crews. Better supervision can be secured where train crews are kept at home. It is difficult, if not impossible, to enforce discipline over crews while operating on a foreign road (particularly against loafing on the job), even though in theory they become the employees of that road while so engaged. Moreover, discipline and standards of performance differ on different railroads, being better on some and worse on others. Where foreign trains and engines operate over a transfer road it ordinarily happens that the general movement is regulated by the slowest and most indifferently operated train. There is also a difference in the standard of power maintenance as between railroads. A stalled train caused by the engine breaking down, not steaming or being overloaded, delays all following trains, and if a foreign crew, the railroad officers who should apply discipline have no direct stake

in the failure, and find excuses ready to hand. The practice of using foreign crews on the transfer road is not sufficiently elastic. The crew may have a full train in one direction and a light train in the other, because it runs between two points only. The belt crew may be ordered to any one of several different points, as the business may indicate."

Heretofore there has been no way to bring about the joint use or unification of railroad terminal facilities except by agreement of the owners. Very little was accomplished.

In the passage of the "Transportation Act of 1920," Congress recognized the possibility of joint use of terminal facilities being necessary or desirable under certain conditions and provided the Interstate Commerce Commission with legal power in the Esch-Cummins Bill, approved February 28, 1920, commonly referred to as the "Transportation Act," to bring about such joint use.

Under subdivision "C" of subsection 15 of section 402 of the Interstate Commerce Act, as amended by section 402 of the Transportation Act, the Interstate Commerce Commission is now authorized

"to require such joint or common use of terminals, including main line track or tracks for a reasonable distance outside of such terminals, as in its opinion will best meet the emergency and serve the public interest, and upon such terms as between the carriers as they may agree upon, or, in the event of their disagreement, as the Commission may after subsequent hearing find to be just and reasonable."

And under subsection 16 the Commission may

"make such just and reasonable directions with respect to the handling, routing, and movement of the traffic of such carrier and its distribution over other lines of roads, as in the opinion of the Commission will best promote the service in the interest of the public and the commerce of the people, and upon such terms as between the carriers as they may agree upon, or, in the event of this disagreement, as the Commission may after subsequent hearing find to be just and reasonable,"

and section 3 of the Interstate Commerce Act, subdivision 4, has been further amended so that

"if the Commission finds it to be in the public interest and to be practicable, without substantially impairing the ability of a carrier

owning or entitled to the enjoyment of terminal facilities, to handle its own business, it shall have power to require the use of any such terminal facilities, including main track or tracks for a reasonable distance outside of such terminal, of any carrier, by another carrier or other carriers, on such terms and for such compensation as the carriers affected may agree upon, or, in the event of failure to agree, as the Commission may fix as just and reasonable for the use so required, to be ascertained on the principle controlling compensation in condemnation proceedings. Such compensation shall be paid or adequately secured before the enjoyment of the use may be commenced. If under this paragraph the use of such terminal facilities of any carrier is required to be given to another carrier or other carriers, and the carrier whose terminal facilities are required to be so used is not satisfied with the terms fixed for such use, or if the amount of compensation so fixed is not duly and promptly paid, the carrier whose terminal facilities have thus been required to be given to another carrier or other carriers shall be entitled to recover, by suit or action against such other carrier or carriers, proper damages for any injuries sustained by it as the result of compliance with such requirement, or just compensation for such use, or both, as the case may be."

In the Transportation Act, Congress also placed all instrumentalities of commerce under control of the Interstate Commerce Commission, to the end that the best use might be made of all railroad facilities in the common good.

While the Transportation Act is quite specific in ordering the Interstate Commerce Commission to recommend consolidation of the railroads into groups, the treatment of the terminals is covered only generally in the above quotations.

As each railroad has been built, improved and developed to balance with its business, and as its mortgages and other obligations depend on that business, no change in the distribution of terminal advantages may be made without seriously affecting the road haul business on its lines, to the great advantage of those roads that have not previously enjoyed it and to the great detriment of those roads that lose it which would then fail to have the business on which their whole physical and financial structure had been built.

Certain railroads, by reason of favorable lo-

cation, foresight and good management are favored with desirable sites for freight houses, team tracks, industries and other advantages which insure to them a better share of traffic than other roads without direct access to them. Through their direct control of service, car supply and switching at such sites they secure shipments which would be shared with competing carriers on an equal footing if the locations were controlled by a joint or unified agency, with a corresponding decrease in their business.

As the decrease in business might reduce their profits more than could be made up to them by rentals for the use of their property by the unified company, they could not be expected to give up, for the benefit of the other roads, the benefits inherent in their peculiar advantages.

It may be taken for granted that the roads which build up their local facilities and locate industries on their lines are in at least as good a position to serve them as any unified company. In fact, it may be said that the individual company which has a direct interest in the business of shippers on its lines will give better service to secure and retain that business than the service that would be given by a disinterested unified company. As the shipper is assured of preferential service of at least one company he may be better off than if given only average service.

However, many details of operation may be so conducted that there will be great savings through the consolidation or unification of certain activities. The advantage of unification include the following in whole or in part:

The reciprocal interchange of cars by which the engines of each road deliver cars into the yards of other roads, the engines returning empty would be eliminated wherever possible, as provisions can be made for loading engines both ways in interchange movements.

Where an industry with connections with several railroads is switched by more than one road, arrangements may be made for the switching to be done entirely by the road in best position to perform it.

Freight stations may be consolidated, with a consequent reduction in stations and clerical forces.

Previously it has been the practice, when freight cars were placed on interchange tracks, for the car inspectors of the delivering road, and also the car inspector of the receiving road to inspect the cars. Arrangements may be made for both roads to accept the results of the inspection of the road in best position to perform it. In some cases the interchange inspection may be entirely eliminated, the only inspection made being after the arrival and before the departure of cars from the terminal.

Certain freight yards may be abandoned, and cars of several roads handled in one yard, resulting in:

Consolidation of car repair forces.

Consolidation of mechanical department and engine house forces.

Reduction in number of cars checkers.

This consolidation is made possible in some cases by one road having sufficient facilities to take care of the business of one or more other roads, without additional supervision or overhead, thus saving the cost of the other organization.

Direct movement of freight may be made wherever possible in interchange between roads over the tracks of an intervening terminal carrier, thus avoiding the delay and expense of the terminal carrier interchanging and classifying cars.

Parallel single track roads may be operated as double track lines.

Empty cars in terminals may be pooled, thus avoiding unnecessary dead movement of empty cars in both directions. At the present time each road maintains its own supply of empties. The total number of empties held for loading may be reduced by pooling.

Yards of individual railroads which are too small for movements in both directions for one road, are sometimes entirely sufficient for movements in one direction of more than one road, when grouped with other yards.

Shippers may look to an individual terminal organization for results, instead of to several.

The most direct route and convenient rail-

road facilities may be used regardless of ownership.

Team tracks may be used reciprocally.

The handling of competitive l. c. l. freight by railroads having very light shipments to certain points may be eliminated, and the freight concentrated on certain roads in better position to handle.

Railroad Study in Chicago

Since 1914 the city of Chicago has maintained a municipal commission known as the "Chicago Railway Terminal Commission" for the purpose of investigating and reporting on the railroad situation there, and to advise the City Council in its dealings with the railroads. That Commission was ably led by its Chairman and Chief Engineer, the late John F. Wallace, until his death in 1921, and by its General Counsel, Walter L. Fischer, formerly Secretary of the Interior.

Two reports of that Commission have been published; one in 1915 treating the entire railroad situation in detail and another in 1921 relating particularly to the straightening of the Chicago River through the railroads' property for the better utilization of that property, the entire destruction of the present single level freight houses and their replacement by multiple level freight houses, the release by the railroads of considerable property adjoining the "Loop" district at prices that would go far toward paying for the new construction, and the extension of more north and south streets through the released area to better serve the business district. The plan is now under serious consideration by the railroads.

The Chicago Commission has expressed the opinion that the best method of solving its terminal problem is to form one large company to take over all railroad facilities within the terminal district and perform all railroad service, the trunk line railroads to perform road

service only. The Commission has not yet adopted this opinion as its final conclusion.

That Commission is very much opposed to the "competitive" theory of railroad development as applied to terminals, and believes that all future facilities should be developed on the "co-operative" plan for the greatest good of all, and to enable the railroads and the public to conduct business in the cheapest, quickest and most convenient manner.

The Commission has seriously considered and mentioned the abandonment of the l. c. l. freight stations of the individual railroads within the congested area and that they be replaced by several group stations at the outskirts of the district, the l. c. l. business of the city to be handled at numerous universal freight stations distributed throughout the city in proportion to the freight, service between the universal freight stations and the outlying stations of the railroads to be provided by trap cars, motor trucks, the freight tunnel, and when and where available, on freight cars on rapid transit lines in off-peak hours.

The Commission is strongly in favor of the multiple level freight station as it believes the revenues from the upper floors will carry the fixed charges of the freight station below.

The Commission recommends keeping out of the business district all freight not originating or destined there, and the handling of interchange freight around the business districts.

Although Chicago has nearly as many railroads as St. Louis and East St. Louis, and handles several times as much freight and passenger business, the railroad problem there is somewhat simpler than at St. Louis by reason of Chicago lying on one side of its main waterway, Lake Michigan, and the railroads forming only part of a circle, while at St. Louis the railroads form a complete circle with terminals on both sides of its main waterway. Chicago terminals somewhat resemble East St. Louis with St. Louis removed.

APPENDIX "A"—COPY OF QUESTIONNAIRE

Data Desired by the Chamber of Commerce in Connection With Survey of Railroad Terminals

St. Louis Terminal District.

Physical Layout:

1. Blueprints showing entire physical property and all real estate, together with improvements, owned or leased, and all operating trackage and terminal facilities rights within the area embraced by Alton and Dupon, Illinois, both inclusive, and from the bluffs on the east to the western boundary line of St. Louis County, Missouri; and the following data as to facilities and traffic of your road: Freight Traffic Within the Above District Freight Houses—(for each house separately):

2. Blue prints, scale not less than 100 feet to one inch, of freight house showing location, size, tracks and platform layout, and street and driveway approaches.

3. Distance between freight house and yards—to and from which empties and loaded merchandise cars are switched from and to freight house; route of such switch movement; by whom is such switching performed?

4. Average time required to completely switch freight house tracks, i. e., fully pull loads and set empties:

- (a) Under normal conditions,
- (b) When general traffic movement is heavy,
- (c) During period of Switchmen's strike April to September, 1920.

5. How often are house tracks usually switched in twenty-four hours?

6. To what extent, if any, is the operation of freight house to its normal capacity interfered with, by:

- (a) Insufficient number of house tracks,
- (b) Bad arrangement of house tracks,
- (c) Present switching methods,
- (d) Freight and passenger trains movement, and the hours and periods of interference from this cause,
- (e) Congested street and driveway approaches to freight house.

7. Classified number of employes engaged directly and respectively in receiving, checking, trucking, loading, storing and handling l. c. l. merchandise.

8. Average normal operating (no overhead)

cost per ton of freight house handling of l. c. l. merchandise.

9. Number and car capacity of house tracks.

10. Floor space, length, breadth, total square feet, covered and uncovered, respectively,—over which l. c. l. merchandise is handled—of:

- (a) Freight house proper,
- (b) Platforms adjacent to house on team side,
- (c) Platforms adjacent to house on track side,
- (d) Island platforms (each and number) between tracks,
- (e) Any other platforms.

11. Number and capacity of trucks employed at freight house:

- (a) Two-wheel hand trucks,
- (b) Four-wheel hand trucks and trailers,
- (c) Electric trucks, size and type.

12. Crane facilities, location, number, type and capacity:

- (a) Hand cranes,
- (b) Power cranes.

13. Number and size of door openings through which freight is:

- (a) Received team side,
- (b) Delivered team side,
- (c) Handled to and from cars, track side.

14. Total St. Louis proper freight tonnage received and forwarded respectively per year for years ending June 30, 1915, and June 30, 1920:

- (a) Carload tonnage,
- (b) l. c. l. tonnage.

15. Total St. Louis proper l. c. l. merchandise tonnage, calendar year 1919:

- (a) Received,
- (b) Forwarded.

16. Total l. c. l. merchandise tonnage moving through this gateway, having origin and destination beyond St. Louis, calendar year 1919:

- (a) Received from connecting lines,
- (b) Delivered to connecting lines.

17. Approximate or estimated tonnage of l. c. l. merchandise handled direct to and from cars, from and to drays and trucks, that does

not pass through freight house, calendar year 1919:

(a) From drays for out movement originating St. Louis,

(b) Delivered to drays and trucks from in movements for St. Louis delivery.

(c) From drays and trucks received from connecting lines.

(d) To drays and trucks for transfer to connecting lines.

18. Average number of pounds of l. c. l. merchandise held in freight house beyond free time, from failure of consignee to receive.

19. Amount of floor space consumed by merchandise so held.

20. Amount of freight house floor space leased to private parties and location, i. e., basement, platform, main or upper floors.

21. Trap cars, movement during October, 1920:

(a) Number of cars loaded at your freight houses, and average tonnage per car:

(1) For delivery direct to consignees in St. Louis,

(2) For delivery to connecting lines for reworking and road movement out-bound.

(3) Average time consumed per car in loading,

(4) Average time consumed per car in switching to consignee's place of unloading,

(5) Average time consumed per car in switching to connecting line,

(6) What billing is made by you to accompany above cars, and average time consumed per car in preparing same.

(b) Number of cars loaded by consignors in St. Louis on your rails, and average tonnage per car:

(1) Average time consumed per car in loading,

(2) Average time consumed per car in switching to your freight houses,

(3) Average time consumed per car in switching to connecting lines.

(c) Number of cars coming to your freight houses at St. Louis and East St. Louis, respectively, for reworking by you, and average tonnage per car:

(1) Average time consumed per car in switching from connecting line and placing at house,

(2) Average time consumed per car in reworking.

22. St. Louis proper l. c. l. tonnage outbound and inbound separately, between freight houses of Terminal Railroad Association, Cupples Sta-

tion and railroad transfer companies severally on the one hand and your road on the other hand, shown separately as to east and west road movement, calendar year, 1919.

23. St. Louis proper l. c. l. tonnage handled by railroad transfer dray and trucks direct between your road and store-door of St. Louis consignors and consignees, calendar year, 1919.—(Note: Eastern lines only need answer this.)

24. Are your present freight house facilities inadequate to properly take care of current business:

(a) During what period,

(b) To what extent,

(c) What are the causes.

25. To what extent, if any, have your freight house facilities and merchandise handling capacity been enlarged within the past fifteen years and location of such enlargements:

(a) 1906—1910,

(b) 1911—1915,

(c) 1916—1920.

Tracks and Yards—(for each location separately):

26. Location, number and car capacity of team tracks on each side of river, and blueprint, scale not less than 100 feet to one inch, thereof, showing also streets by name and driveways serving same, and give any suggestions as to needed widening and improvements.

27. Daily average number of cars, loads and empties, consigned to and from team tracks.

28. Extent to which, respectively, cars, loads and empties, cannot be placed on team tracks account tracks occupied:

(a) During normal movement.

(b) During heavy movement.

29. Average number of carloads daily brought to team tracks for inspection and the principal such commodities.

30. Extent to which same are subsequently switched from team tracks for unloading or movement beyond, and average daily detention of such cars on team tracks:

(a) During normal movement.

(b) During heavy movement.

31. Location, number and capacity of hold tracks on each side of river, and blueprint, scale not less than 100 feet to one inch, of same.

32. Average number of cars occupying hold tracks daily:

(a) During normal movement.

(b) During heavy movement.

33. Kind of principal commodities for "hold."

34. Average daily number of cars for hold tracks that cannot be placed thereon account tracks occupied:
- (a) During normal movement.
 - (b) During heavy movement.
35. Location, number and capacity of repair tracks on each side of river, with blueprint, scale not less than 100 feet to one inch, of same; average number of men engaged thereat, average detention of cars thereon, and average number of cars repaired daily.
36. Average daily number of cars for repair tracks that cannot be placed thereon account tracks occupied:
- (a) During normal movement.
 - (b) During heavy movement.
37. Location and capacity of classification and storage yards on each side of river, with blueprint, scale not less than 100 feet to one inch, of same.
38. Average daily number of cars that cannot be placed in these yards, or any of them, account yard full:
- (1) During normal movement,
 - (2) During heavy movement, and reasons:
 - (a) Account your yard inadequate.
 - (b) Account connecting lines' yards inadequate.
39. Extent to which carload business for St. Louis consignees is delivered by eastern lines on east bank of river, account inability of Terminal Railroad Association to receive and handle in switch movement:
- (a) During normal movement.
 - (b) During heavy movement.
- Carload Freight interchange:
For the month of October, 1920, number of loads and empties, route of switch movement, and points of interchange, from roads and industries on west side of river:
40. To roads and industries on east side of river via:
- (a) Merchants Bridge.
 - (b) Eads Bridge.
 - (c) Alton Bridge.
 - (d) Ivory Ferry Transfer.
41. To Terminal Railroad Association (except West Belt):
- (a) Team Tracks.
 - (b) Local Industries.
42. To Terminal Railroad Association, West Belt:
- (a) Team Tracks.
 - (b) Local Industries.
43. To Missouri Pacific (except I. M. & S. and Oak Hill Branch):
- (a) Team Tracks.
 - (b) Local Industries.
 - (c) For Beyond.
44. To St. Louis, Iron Mountain & Southern:
- (a) Team Tracks.
 - (b) Local Industries.
 - (c) For Beyond.
45. To Missouri Pacific—Oak Hill Branch:
- (a) Team Tracks.
 - (b) Local Industries.
 - (c) For Beyond.
46. To Frisco:
- (a) Team Tracks.
 - (b) Local Industries.
 - (c) For Beyond.
47. Wabash (U. D. Line):
- (a) Team Tracks.
 - (b) Local Industries.
48. To Manufacturers' Railway:
- (a) Team Tracks.
 - (b) Local Industries.
- To Roads and Industries in North St. Louis.
49. To Wabash:
- (a) Team Tracks.
 - (b) Local Industries.
 - (c) For Beyond.
50. To C. B. & Q.:
- (a) Team Tracks.
 - (b) Local Industries.
 - (c) For Beyond.
51. To C. R. I. & P.:
- (a) Team Tracks.
 - (b) For Beyond.
52. To M. K. & T.:
- (a) Team Tracks.
 - (b) For Beyond.
- From Roads and Industries on East Side
53. To Roads and Industries on West Side via:
- (a) Merchants Bridge.
 - (b) Eads Bridge.
 - (c) Alton Bridge.
 - (d) Ivory Ferry Transfer.
54. The Terminal Railroad Association (except West Belt):
- (a) Team Tracks.
 - (b) Local Industries.
55. To Terminal Railroad Association, West Belt:
- (a) Team Tracks.
 - (b) Local Industries.
56. To Missouri Pacific (except I. M. & S. and Oak Hill Branch):
- (a) Team Tracks.
 - (b) Local Industries.
 - (c) For Beyond.
57. To St. L. I. M. & S.:
- (a) Team Tracks.
 - (b) Local Industries.
 - (c) For Beyond.

58. To Missouri Pacific Oak Hill Branch:
 (a) Team Tracks.
 (b) Local Industries.
 (c) For Beyond.
59. To Frisco:
 (a) Team Tracks.
 (b) Local Industries.
 (c) For Beyond.
60. To Wabash (U. D. Line):
 (a) Team Tracks.
 (b) Local Industries.
 (c) For Beyond.
61. To Manufacturers' Railway:
 (a) Team Tracks.
 (b) Local Industries.
- To Roads and Industries in North St. Louis.
62. To Wabash:
 (a) Team Tracks.
 (b) Local Industries.
 (c) For Beyond.
63. To C. B. & Q.:
 (a) Team Tracks.
 (b) Local Industries.
 (c) For Beyond.
64. To C. R. I. & P.:
 (a) Team Tracks.
 (b) Local Industries.
 (c) For Beyond.
65. To M. K. & T.:
 (a) Team Tracks.
 (b) For Beyond.
- East Side (Proper) Interchange.

66. Through carload and less-than-carload tonnage, respectively, calendar year, 1919, delivered by east side lines to connecting lines on the east side, not passing to the west side; routes of switch movement, and points of interchange.

67. Interchange to and from North Market Street Dock, calendar year, 1919, carload and less-than-carload tonnage separately.

Passenger Traffic.

68. Number of trains and cars into Union Station, calendar year, 1919, by railroads:

- (a) Regular trains.
- (b) Suburban trains.

69. Number of passenger trains and cars during year 1919, crossings:

- (a) Merchants Bridge.
- (b) Eads Bridge.

70. Route of movement in St. Louis and East St. Louis of passenger trains crossing Merchants Bridge.

71. Route of movement in East St. Louis of passenger trains crossing Eads Bridge.

General.

Have you in contemplation any immediate, or early improvements, expansions or rearrangements of local facilities for the receipt, forwarding and terminal handling of freight and passenger traffic in St. Louis-East St. Louis District, and through this gateway?

APPENDIX "B"—TABULATION OF ANSWERS TO QUESTIONNAIRE

The following pages include summaries of the answers to questionnaires, except where the answers could be better shown by graphs. The tabulations of the answers to such questions as could be best shown graphically are indicated on diagrams accompanying this report.

The questionnaire was answered by all railroads except the Chicago and Eastern Illinois.

Answers to Questions 1 and 2

Physical Layout:

These questions were answered by the railroads furnishing maps that were used in the preparation of exhibits to accompany the report.

Answers to Questions 3, 4, 5, 6

Freight House Operation.

Baltimore & Ohio Railroad

Distance, freight house to Cahokia Yard, is one-fourth mile, and to Cone Yard one-half mile. The Cone Yard is used for both inbound and outbound freight. Switching performed by B. & O. Railroad.

Under normal conditions, fully pull loads and set empties in three hours. When general traffic movement is heavy, three hours and thirty minutes. During the Switchmen's strike, April to September, 1920, four hours. The time stated is average time.

House tracks are completely switched at night—partially switched at noon.

The operation of freight house to its normal capacity is not interfered with by any of causes mentioned in questionnaire.

Chicago & Alton Railroad

Yard is adjacent to freight houses. Switching performed by C. & A. engines.

Completely switch freight house tracks, un-

der normal conditions, in four hours; when traffic movement is heavy, in six hours; during period of Switchmen's strike, six hours.

House tracks are usually switched once in twenty-four hours.

The operation of freight house to its normal capacity is not interfered with by any cause mentioned in questionnaire.

Chicago, Burlington & Quincy Railroad

East St. Louis freight house is one-half mile from yards in East St. Louis. The St. Louis freight house is four miles from the St. Louis freight yards. Switching is performed by the C. B. & Q. engines.

The average time required to completely switch freight house tracks under normal conditions is eight hours. Same time required when general traffic movement is heavy and also during Switchmen's strike of 1920.

House tracks are normally switched once of outbound cars, and twice of inbound cars, in twenty-four hours.

The operation of freight houses to normal capacity is not interfered with by any cause mentioned in questionnaire.

Cleveland, Cincinnati, Chicago & St. Louis Railway

Distance from freight houses to outbound yards is 1.7 miles.

The inbound yards are adjacent to the freight houses, the center of freight houses to center of gravity of yards being about 900 feet.

Switching is performed by C. C. C. & St. L. engines.

Under normal conditions, average time to pull loads and set empties is one and one-half hours. When general traffic movement is heavy, one and one-half hours. During Switchmen's strike 1920, one and one-half hours.

House tracks are usually switched twice in twenty-four hours.

Operation of freight house to normal capacity is interfered with:

When inbound is heavy, usually hold out twenty-five cars.

In isolated cases, by inbound freight trains between 11:45 a. m. and 1:00 p. m. and between 4:45 p. m. and 6:00 p. m.

No interference account of other causes cited by questionnaire.

Chicago, Peoria & St. Louis Railroad

The yard is adjacent to the freight house.

In and outbound freight are handled through same house, cars are handled in yard adjacent to freight house from yard track to house track. Switching is performed by C. P. & St. L. engines.

Average time to completely switch freight house track, under normal conditions, is one hour; when general traffic movement is heavy, one hour and twenty-five minutes; during Switchmen's strike in 1920, one hour and thirty minutes.

House tracks are usually switched twice in twenty-four hours.

The operation of freight house to normal capacity is not interfered with by any cause mentioned in questionnaire.

Chicago, Rock Island & Pacific Railway

The freight facilities of the C. R. I. & P. Railway Company, the C. & E. I. Railroad, and the St. L.-S. F. are used jointly.

Distance from Carrie Avenue Yard to the Biddle street freight house is 3.97 miles. Switching is performed by the Terminal Railroad Association engines.

It appears that insufficient number of house tracks, and bad arrangement of house tracks interfere with operation of freight house to its normal capacity to some extent, which is stated as 5 per cent in each case.

The average time required to completely switch freight house tracks is not given.

Illinois Central Railroad

Average switching distance between new yard and freight house is two miles.

Between Lumber Yard and Freight House, three-fourths mile.

Between Broadway Yard and Freight House, one-fourth mile.

All switching performed by Illinois Central engines.

Under normal conditions, pull loads and set empties in eight hours. No increase of time required when general traffic movement is heavy, or during the Switchmen's strike in April, 1920.

The outbound house track is switched once, and the inbound house track twice, in twenty-four hours.

Operation of freight house to normal capacity is not interfered with by any cause mentioned in the questionnaire.

Illinois Traction System

Yard in Granite City is six and one-half miles from freight house in St. Louis. All switching is performed by I. T. S. engines.

Time required to switch freight house track under all conditions is ten hours. The freight is switched once in twenty-four hours.

Operation of freight house to normal capacity is not interfered with by any cause mentioned in the questionnaire.

Louisville & Nashville Railroad

The East St. Louis freight house is adjacent to the yard. The St. Louis freight house is ten miles from the yard. The east side house is switched by L. & N. engines, west side house is switched by the Terminal Railroad Association engines. Under normal conditions the east side house is completely switched in one hour and fourteen minutes; the west side house in two hours. During heavy traffic the east side house is switched in two hours and thirty minutes and the west side house in three hours. During the Switchmen's strike, April to September, 1920, it required four hours to switch each house.

The houses are switched twice in twenty-four hours.

Operation of freight house to normal capacity is not interfered with by any cause mentioned in the questionnaire.

Missouri, Kansas & Texas Railway

Distance from Broadway and Mullanphy freight house to Baden Yard 5.8 miles. Switching performed by Terminal Railroad Association engines.

The average time required to completely switch freight house tracks, under normal conditions, is three hours; when general traffic movement is heavy, four hours; during Switchmen's strike, April to September, 1920, four to six hours.

During a twenty-four-hour period, empties are placed once and loads are removed once.

Regarding the operation of freight house to normal capacity, the trackage is sufficient and the arrangement satisfactory.

Outbound team track loads and merchandise are pulled out by Terminal Switch engines between hours of 6 p. m. and 8 p. m. Empties placed for loading outbound set between midnight and 8 a. m. Inbound merchandise loads and team track loads placed same hour. Occasionally inbound loads are placed between 8 a. m. and 2 p. m.

There being four other freight houses on the same main track and many industries located on this single main track between Mullanphy street and Carrie avenue, the handling of outbound merchandise and inbound merchandise empties is badly interfered with at all hours, due to opposing engines working on the same single track, handling empties and loads for industries and other freight houses.

Missouri Pacific Railroad

Seventh Street Freight Station:

Empties:

25 per cent from Ivory Yard via Oak Hill Branch 11.8 miles.

25 per cent from Lesperance Street Yards via Poplar Street Connection, 2.3 miles.

50 per cent from Spring avenue, via Mo. Pac. rails through Mill Creek Valley, 2.5 miles.

Switching performed by Missouri Pacific engines.

Loads:

Move from and to yards at Twenty-third street over Mo. Pac. rails, distance 1.1 miles; switched by Missouri Pacific engines.

Biddle Street Freight Station:

Empties:

Moved from Twelfth Street Yards, 2.4 miles.

Switched by Terminal Railroad Association via Terminal Elevated.

Loads:

Received at Twelfth street, and moved over Terminal Elevated by Terminal Railroad Association, distance 2.4 miles.

Gratiot Street Station:

Empties and Loads:

Move from and to the Lesperance Street Yards direct, distance 0.5 miles. Switched by Mo. Pac. engines.

Time required to pull loads and set empties:

Seventh Street Station—Under normal conditions, twelve hours.

Not affected by heavy general traffic movement or by strike.

Biddle Street Freight Station—Under normal conditions, four hours.

Gratiot Street Freight Station—Under normal conditions, eight hours.

At the Seventh Street Station house tracks, cars are set twice and pulled three times in twenty-four hours; at Biddle street they are set once and pulled once; at Gratiot Street Station they are set twice and pulled three times in twenty-four hours.

The operation of freight houses to their normal capacity is interfered with in the case of the Gratiot Street Station, by poor arrangement of tracks serving local shed, a rearrangement of which would increase capacity five or six cars.

Also, at the same station, the lack of hard surface on Gratiot and First streets causes stalling of vehicular traffic and consequent congestion.

Mobile & Ohio Railroad

Distance freight house to yards, 2,000 feet.

Switching performed by M. & O. engines.

Under normal conditions, fully pull loads and set empties in about three hours; when general traffic movement is heavy, about three hours; during the Switchmen's strike, April to September, 1920, from three to six hours were required.

In twenty-four hours, the house tracks are completely switched once, and the inbound cars, three to four times.

Operation of freight house to its normal capacity is not interfered with by any cause mentioned in questionnaire.

Pennsylvania Railroad.

East St. Louis Freight Houses:

Rose Lake Westward Yard to Inbound Freight House over Pennsylvania Railroad main line and running tracks, 4.5 miles.

Outbound Freight House to Rose Lake Eastward Yard, over Pennsylvania Railroad tracks, distance 3.5 miles.

All switching performed by Pennsylvania engines.

St. Louis, Main and O'Fallon Street Freight House (when in operation, 1920):

Inbound freight, from Rose Lake Westward Yard to Willows, over Pennsylvania tracks; thence over St. Louis Merchants Bridge Terminal Railway main tracks, across Merchants Bridge and southwardly, a distance of 9.6 miles.

Outbound freight, the reverse of above, distance 8.6 miles.

All switching performed by St. L. M. B. T. Railway.

Average time required to switch freight houses:

East St. Louis:

Under normal conditions, three hours.

Under heavy traffic, four hours.

During Switchmen's strike, 1920, three hours.

Main and O'Fallon Freight House:

Under normal conditions, forty-five minutes.

Under heavy traffic conditions, one hour.

During Switchmen's strike, one and one-half hours.

Freight houses are switched as follows:

East St. Louis:

Inbound, twice in twenty-four hours.

Outbound, once in twenty-four hours.

Main and O'Fallon House:

Switched once in twenty-four hours.

The operation to normal capacity of freight houses is not interfered with to any appreci-

able extent by any of causes mentioned in questionnaire.

St. Louis-San Francisco Railway.

Distance, Clifton Heights Yard (outbound) to Seventh Street Freight House is ten miles; to Broadway Station, 12.2 miles.

Distance, Chouteau Avenue Yards (inbound yard) to Seventh Street Station is 3.6 miles.

Inbound freight is brought to Chouteau Avenue Yards, sorted and turned over to Terminal Railroad Association at Twenty-third street, which handles to the freight houses. Outbound freight is brought from freight houses to Twenty-third street by Terminal Railroad Association; from Twenty-third street it is handled by St. L.-S. F. engines to their yards at Clifton Heights.

The average time required to completely switch freight house tracks under normal conditions:

Seventh Street House, five hours.

Broadway House, five hours.

When general traffic movement is heavy, depends upon congestion of terminal. Exact time not obtainable. No information to answer as to time required during the strike period.

House tracks are usually switched once in twenty-four hours.

The present switching method at both Broadway and Seventh Street houses is to set empties for outbound and loads from inbound trains at night, usually pulling both houses at 6:00 p. m.

If not performed as above, the pulling and placing at both houses is interfered with by passenger trains up to 8 p. m.

St. Louis Southwestern Railway.

Distance, freight house to yard, 11¾ miles.

Routing via Merchants Bridge and Illinois Transfer.

Switching is performed by Terminal Railroad Association.

Average time to completely switch freight house tracks, under normal conditions, six hours.

When general traffic movement is heavy, six hours.

During Switchmen's strike, 1920, four hours. House tracks are usually switched once in twenty-four hours.

Operation of freight house to normal capacity not interfered with by any cause mentioned in questionnaire.

Southern Railway

Distances between freight houses and Coapman Yard is as follows:

Broadway Freight House to Coapman Yard, 2.52 miles.

Sixth Street Freight House to Coapman Yard, 2.27 miles.

Route is direct, from freight house to yard.

Switching is performed by Southern Railway engines.

Under normal conditions, fully pull loads and set empties in fifty minutes. When general traffic movement is heavy, one hour and thirty minutes. During Switchmen's strike, April to September, 1920, two hours.

House tracks usually switched three times in twenty-four hours.

Operation of freight house to normal capacity is not interfered with by any cause mentioned in questionnaire.

Terminal Railroad Association

Switching performed by own engines.

Freight houses Nos. 1 and 2 and yards are together, from Tenth to Twelfth street, St. Louis.

No data available as to average time required to completely switch freight house tracks.

House tracks are switched once in every twenty-four hours.

The operation of freight house to normal capacity is not interfered with by any cause mentioned in questionnaire.

Toledo, St. Louis & Western Railway

Distance from freight house to yards is 3.78 miles.

Switching performed over T. St. L. & W. main line by T. S. L. & W. engines.

Average time required to completely switch freight house tracks, under normal conditions, is thirty-five minutes; when general traffic movement is heavy, time required is forty-five

minutes; during the Switchmen's strike in 1920, fifty-five minutes required.

House tracks are usually switched once in twenty-four hours.

The operation of freight house to normal capacity is not interfered with by any cause mentioned in the questionnaire.

Wabash Railway

Distance North Market Street Yards to Franklin Avenue Freight House, one and one-half miles.

Distance, Bridge Junction Yards, East St. Louis to Front Street Freight House, three-fourths mile.

Switching in both cases is performed by Wabash engines.

The average time required to completely switch freight house tracks, in St. Louis, is eight hours, under normal conditions, or when general movement is heavy, and same time was required during Switchmen's strike of 1920.

In East St. Louis, four hours per day is average time required under all conditions.

House tracks are switched twice in twenty-four hours, at noon and at night. Applies to both East St. Louis and St. Louis.

The operation of freight houses to normal capacity is not interfered with by any cause mentioned in questionnaire.

Answers to Question 7

Number of Employees:

As the number of employees varies with the amount of business the answers are not readily comparable; therefore they have not been tabulated.

Answers to Questions 8, 9, 10, 11, 12, 13, 14, 15 and 16

Freight House Data:

The answers to these questions are shown on statement of Freight House data for each road in Appendix D.

Answers to Question 17

L. C. L. merchandise tonnage that passed direct between cars and drays not passing through Freight Houses for the year 1919:

The only roads that reported l. c. l. freight handled in this manner are the C. C. C. & St. L., Pennsylvania and St. L.-S. F. The amounts

of freight so handled were very small in comparison to the freight passing through the freight houses.

Answers to Questions 18 and 19

Amount of l. c. l. merchandise held in freight house beyond free time and floor space consumed by such merchandise:

B. & O.—300 pounds per month, occupying 4 square feet.

C. & A.—None.

C. B. & Q.—3,000 pounds daily, occupying 30 square feet.

C. C. C. & St. L.—700 pounds average amount, occupying 200 square feet.

C. P. & St. L.—2,000 pounds per month, occupying 20 square feet.

C. R. I. & P.—42,000 pounds average per month from January to September, 1920.

I. C.—1,300 pounds per day, occupying 150 square feet.

L. & N.—2,000 pounds per day, occupying 50 square feet.

M. K. & T.—75,000 pounds per day, occupying 6,000 square feet.

Mo. Pac. (Seventh street)—2,000 pounds per day, occupying 400 square feet.

Mo. Pac. (Gratiot street)—2,000 pounds per day, occupying 400 square feet.

M. & O.—Not over 500 pounds per day, occupying 30 square feet.

Pennsylvania (East St. Louis)—500 pounds daily, occupying 20 square feet.

Pennsylvania (St. Louis)—2,500 pounds daily, occupying 100 square feet.

St. L.-S. F. (Seventh street)—142,283 pounds per month, occupying variable space.

St. L.-S. F. (Broadway)—5,927 pounds per month, occupying variable space.

St. L. S. W.—1,000 pounds per day; space unknown.

Southern—Practically none.

T. R. R. A.—No data available.

T. St. L. & W.—Not over 100 pounds per day. Practically no space occupied.

Wabash (St. Louis)—10,000 pounds per day.

Wabash (East St. Louis)—1,500 pounds per day.

Answers to Question 20

Freight house floor space leased to private parties:

The following are the only railroads that lease freight house space to private parties:

M. K. & T.

Three inbound platforms on the Broadway level, three driveways on the Broadway level, four tracks on track level, with island platform, leased to the United States Government Quartermaster temporarily for the storing of Government supplies. Total area, 37,318 square feet exclusive of driveway.

St. L. S. W.

Four floors of Florida Street Station are leased to the Main Street Warehouse Co.

Second Floor Storage.....	15,420 Square Feet
Cold Storage	1,291 Square Feet
Office, etc.....	5,265 Square Feet
Third Floor Storage.....	17,850 Square Feet
Warm Storage	2,430 Square Feet
Fourth Floor Storage.....	20,280 Square Feet
Fifth Floor Storage.....	20,280 Square Feet

Total82,816 Square Feet

Wabash

St. Louis, Platform.....14,440 Square Feet

St. Louis, Second Floor..... 2,400 Square Feet

Since October, 1920, Pennsylvania has leased its St. Louis house for warehouse purposes.

Answers to Question 21

Trap Car Business October, 1920:

	No. of Cars Loaded to Consignee in St. Louis	Average Tonnage Per Car	No. of Cars to Connect- ing Lines	Average Tonnage Per Car	No. of Cars Loaded by Con- signors on Your Rails in St. Louis	Average Tonnage Per Car	No. of Cars Received for Reworking Outbound	Average Tonnage Per Car
B. & O.....	3	6	59	10	...	...	20	6.5
C. & A.....	10	7.5	78	7.5	...	...	111	7.5
C. B. & Q.....	23	8.4	13	8.4	...	...	208	12.5
C. C. C. & St. L.....	21	7	153	13	...	...	260	8
C. P. & St. L.....	...	...	16	8	...	...	6	10.5
C. R. I. & P.....	10	6.5	12	4	...	...	82	18
I. C.....	...	...	...	...	...	...	650	9
I. T. S.....	...	...	...	...	...	...	...	...
L. & N. (East St. Louis).....	9	5	3	5.5	...	...	88	9.5
L. & N. (St. Louis).....	2	5	5	...	9	10	...	...
M. K. & T.....	...	...	...	...	50	...	300	...
Mo. Pac. (7th Street).....	13	2.5	61	8.5	35	10.5	207	7.5
Mo. Pac. (Gratiot).....	12	4.0	31	5.5	40	13	214	9.5
M. & O.....	...	...	6	8.2	...	...	99	7.5
Pennsylvania (East St. Louis).....	13	5.5	143	6.6	49	16.4	140	9
Pennsylvania (St. Louis).....	16	5.5	...	...	...	...	...	...
St. L.-S. F. (7th Street).....	...	...	65	5.5	22	12	60	8
St. L.-S. F. (Broadway).....	10	6.5	12	4.5	...	...	82	8
St. L. S. W.....	...	...	4	6	...	...	116	9
Southern.....	...	...	5	6.5	...	...	480	8.5
T. R. R. A.....	...	...	Question not answered		...	...	...	...
T., St. L. & W.....	15	5	35	5	...	...	50	5
Wabash (East St. Louis).....	...	...	6	8.5	...	...	96	8
Wabash (St. Louis).....	40	5	16	5	62	6	72	5

Answers to Question 22.

Tons of L. C. L. Freight in 1919 Delivered to and Received from	T. R. R. A. Freight House		Cupples Station		Transfer Companies	
	To	From	To	From	To	From
B. & O.....	4,800	2,656	1,171	3,913	21,707	15,111
C. & A.....	Information not available					
C. B. & O.....	.....	229	648	7,382	.....	23,000
C. C. C. & St. L.....	16,113	3,348	2,445	2,349	15,626	40,207
C. P. & St. L.....	1,362	1,558	117	937	3,531	7,023
C. R. I. & P.....	.....	.....	145	498	.....	7,608
I. C.....	Information not available					
I. T. S.....	.....	.....	.....	.....	1,869	10,861
L. & N.....	Information not available					
M. K. & T.....	Information not available					
Mo. Pac.....	.....	.....	1,422	14,688	.....	22,092
M. & O.....	994	2,452	561	1,214	2,086	34,787
Pennsylvania.....	2,193	2,671	2,993	4,131	4,801	13,854
St. L.-S. F.....	.....	.....	449	12,611	227	18,151
St. L.-S. W.....	.....	.....	62	3,709	.....	16,027
Southern.....	4,469	1,818	2,293	2,976	.....	.....
T. St. L. & W.....	Question not answered					
Wabash (East St. Louis).....	.....	480	.....	992	2,861	15,892
Wabash (St. Louis).....	1,824	1,967	2,436	1,786	171,576	178,495

Answers to Question 23

St. Louis proper l. c. l. tonnage handled by railroad transfer drays and trucks direct between railroad and store doors of St. Louis consignors and consignees, calendar year, 1919:

Of the East Side lines requested to answer this question the

B. & O.—Reports 2,085 tons delivered to St. Louis stores and 1,460 tons received.

C. C. C. & St. L.—9,126 tons delivered (stated westbound) and 668 tons received (stated eastbound).

Pennsylvania—Reports 467 tons total delivered to and received from St. Louis stores.

I. C.—Reports none delivered or received.

St. L. S. W.—Reports none delivered or received.

Wabash—Reports none delivered or received.

The other East Side roads did not answer the question.

Answers to Question 24

Adequacy of freight house facilities to properly take care of current business:

B. & O.—Reports that their facilities are frequently inadequate at no special period; during heavy seasons continuously inadequate. The congestion is such that they are forced to load trap cars for relief. The cause is that the transfer service is not sufficient.

C. B. & O.—Reports that facilities are adequate to care for normal business.

C. R. I. & P.—Facilities inadequate from 3:00 p. m. to 5:00 p. m. to extent of 20 per cent on account of late deliveries. Practically 35 per cent of freight, on the average, is delivered after 3:00 p. m. for outbound movement.

St. L.-S. F.—Reports that at times during the year freight house facilities are inadequate to handle business. The exact causes are so variable that they cannot be set out.

All other roads report their freight house facilities are adequate to handle properly the current business.

Answers to Questions 25

Extent to which freight house facilities and merchandise handling capacity have been enlarged within the past fifteen years:

The following railroads report that no enlargements have been made within the past fifteen years in freight house facilities and merchandise handling capacity:

B. & O.—C. R. I. & P.—C. P. & St. L.—St. L.-S. F.—Southern—T. R. R. A.

Of the above railroads the C. R. I. & P. and Southern state that no immediate improvements are contemplated.

The B. & O., C. P. & St. L., St. L.-S. F. and T. R. R. A. made no statement as to proposed improvements.

Other railroads report improvements as follows:

C. & A.—From 1906 to 1910 little or no expansion took place. From 1911 to 1915, considerable expansion was made. (Extent and nature not stated.) During period 1916 to 1920, freight terminals were rebuilt and enlarged, and are now said to be ample for their needs. Additional expansion is not contemplated for some years.

C. B. & Q.—From 1906 to 1915 no improvements were made. During period from 1916 to 1920 one transfer dock opposite freight house, to accommodate 12 cars, was built. Under existing conditions no immediate expenditures anticipated. Several projects under investigation but not completed.

C. C. C. & St. L.—From 1906 to 1910, the inbound freight house was extended 330 feet and platform at east end extended 55.6 feet. From 1911 to 1915 no additional improvements. During 1916 to 1920, the outbound platform was extended 40 feet at east end. Contemplate building of a large terminal freight yard at Lenox. Work has already been started on the first unit of this yard.

I. C.—From 1906 to 1915 no changes were made. Both inbound and outbound freight houses existing in 1915 were replaced with modern structures—the outbound house in 1917 and the inbound in 1919. The new inbound house floor space is approximately 7,468 feet greater than the old one. The new outbound freight house floor space is not any larger than that of the old house, but the transfer platform greatly increased capacity of facilities for handling merchandise through house. No additional immediate or early improvements are contemplated.

I. T. S.—Present freight house was built entirely new about 1910.

L. & N. (East St. Louis)—Five tracks built since 1910, with total car capacity of 85 cars. Large freight house constructed and later large addition built to freight office and station.

L. & N. (St. Louis)—New receiving office built to expedite receipt of freight, straight-

ened lead tracks. New incline driveway built for handling machinery and other heavy material. Teaming alley widened and paved.

M. K. & T.—The present freight house was constructed in 1911 and certain rearrangements of platforms and facilities at track level were made in 1914.

Missouri Pacific—From 1906 to 1915 no increase in facilities were made. During period 1916 to 1920 an addition, 24x240 feet, was made to the east inbound shed, at the Gratiot Street Freight Station. No immediate or early improvements contemplated.

M. & O.—From 1906 to 1915 no improvements were made. From 1916 to 1920 additions were made to the Cahokia Yard, three tracks being added, aggregating a length of 6,105 feet. During this same period an entirely new freight house was built in East St. Louis of ample size to handle the business.

Pennsylvania—The freight house facilities at East St. Louis have not been enlarged during the past fifteen years. The freight house at Main and O'Fallon streets, St. Louis, was taken over in June, 1911, from the M. K. & T. Railway, to which road it was leased until that time. The house is 60x705 feet (42,000 square feet), covered platform in track side 705 feet by 5 feet 9 inches, and the unloading platform 86 feet long by 35 feet 6 inches at one end and 11 feet wide at other end. The enlargement of Rose Lake Yard with the view of making more classification at that point is now being considered.

St. L. S. W.—The former freight station at Second and LaSalle streets (43 feet 4 inches by 248 feet 6 inches), with two tracks, was given up January 31, 1913, at which time the present station at Florida and Main streets was opened. No other improvements are reported during last fifteen years, and none are contemplated at the present time or immediate future.

T. St. L. & W.—A modern office and new freight house were built and tracks rearranged in 1913. No other improvements reported during past fifteen years.

Wabash—Two additional freight houses

were established in St. Louis during period from 1906 to 1910, total area 82,171 square feet. In 1917 a 1,500-car yard was constructed in Granite City. No immediate or early improvements, expansions, or rearrangements are contemplated.

Answers to Questions 26 and 27

Number, capacity and daily cars to team tracks:

Answers to these questions shown elsewhere in graphic form.

Answers to Question 28

Extent to which cars, loads and empties cannot be placed on team tracks on account of tracks occupied:

C. B. & Q.—Reports that team track facilities are adequate to handle 50 per cent more than normal business.

C. P. & St. L.—Reports that during normal movement all cars can be placed. During heavy movement cars to extent of ten loads cannot be placed.

Southern—States they can place all cars. Have been able to set all team track cars, except in cases of accumulation, due to interruption of transportation, such as during the Switchmen's strike.

The question was not answered by C. R. I. & P. and T. R. R. A.

All other roads report ability to place all cars during both normal and heavy movement.

Answers to Questions 29 and 30

Number of cars to team tracks for inspection and unloading:

The answers to these questions are shown elsewhere in graphic form.

Answers to Questions 31, 32 and 33

Number, capacity and average daily cars to hold tracks:

Answers to these questions shown elsewhere in graphic form.

Answers to Question 34

Average daily number of cars for hold tracks that cannot be placed thereon account of tracks occupied:

C. B. & Q. and Pennsylvania—Reports that when regular hold tracks are filled, other additional tracks are assigned for this purpose.

C. C. C. & St. L.—During normal movement all cars can be placed. During heavy movement an average of 10 cars cannot be placed.

T. St. L. & W.—Reports that all cars can be placed during normal movement. During heavy movement 100 cars cannot be placed.

C. R. I. & P. and T. R. R. A.—Make no reply to this question.

The other roads report that hold tracks are sufficient to accommodate all cars both during normal and heavy movement.

Answers to Question 36

Repair Tracks:

Average daily number of cars for repair tracks that cannot be placed there on account of tracks occupied:

B. & O.—During normal movement all cars can be placed. During heavy movement average of 25 cars cannot be placed.

C. B. & Q. (East St. Louis)—Average of 25 cars cannot be placed both during normal and heavy movement.

C. R. I. & P.—During normal movement all cars can be placed. During heavy movement average of 60 cars cannot be placed.

C. C. C. & St. L.—Reports that 10 cars during normal movement and 25 cars during heavy movement cannot be placed on account of tracks occupied.

Pennsylvania—All cars can be placed during normal movement. During heavy movement about 30 cars per day cannot be placed on repair tracks.

St. L.-S. F.—Reports that about 50 cars cannot be placed, after all rip tracks are full at Chouteau avenue.

Question not answered by T. R. R. A.

The other roads report that repair tracks are ample to take all cars both during normal and heavy movement.

Answers to Questions 26, 35 and 37

Name of Road	Capacity of Classification and Storage Tracks	Capacity of Team Tracks	Capacity of Repair Tracks	No. of Cars Repaired Daily
A. & S.....	750	25	50	....
B. & O.....	934	148	84	82
C. & A.....	259	43	112	60
C. B. & Q. (East).....	604	62	60	60
C. B. & Q. (West).....	2,213	388	40	30
C. & E. I. }	667	102	150	96
C. R. I. & P. }				
C. C. C. & St. L.....	906	126	52	50
C. P. & St. L.....	450	51	37	19
East St. Louis & Sub.....	....	41	60	12
I. C.....	1,738	140	155	100
I. T. S.....	....	109	25	5
L. & N. (East).....	512	96	75	60
L. & N. (West).....	....	30	....	....
Manufacturers .....	....	365	....	8
M. K. & T.....	1,050	42	176	75
Mo. Pac. (East).....	2,418	....	165	453
Mo. Pac. (West).....	5,432	595	413	621
M. & O.....	945	44	60	35
Pennsylvania (East).....	1,151	143	128	40
Pennsylvania (West).....	....	50	....	....
St. L.-S. F.....	1,177	230	179	80
St. L.-S. W.....	894	54	57	42
St. L. T. & E.....	....	14	....	....
St. L. & O'F.....	475	....	50	23
Southern	1,790	98	170	60
T. R. R. A. (East).....	11,175	104	681	....
T. R. R. A. (West).....	3,704	1,558	280	....
T. St. L. & W.....	917	50	54	15
Wabash (East).....	2,484	115	95	61
Wabash (West).....	1,903	221	80	48

Answers to Question 38

Classification and Storage Yards:

Average daily number of cars that cannot be placed account yard full:

B. & O.—During normal movement none, except when offered by all direct connections at same time may be a few hours' delay. During heavy movement 25 to 100 cars cannot be placed. All lines become congested and all come or offer heavy cuts of cars and they are unable to relieve us of cars ready for delivery to them. 25 to 100 cars cannot be placed on account of connecting line's yards inadequate.

C. B. & Q.—States they cannot answer.

C. R. I. & P.—During normal movement 75 cars cannot be placed. During heavy movement 150 cars cannot be placed. Cause stated to be both account of the inadequacy of C., R. I. & P. Yards and of yards of connecting lines.

C. C. C. & St. L.—During normal movement all can be placed. During heavy movement about 30 cars cannot be placed. Cause due to inadequacy of C. C. C. & St. L. Yards

and to connecting line's failure to accept currently.

M. K. & T.—None. Unless eastern lines embargo freight.

Missouri Pacific—All tracks, main line west between Twelfth street and Tower Grove Station: During heavy movement 200 cars cannot be placed account of connecting line's yards inadequate. Lesperance Street Yard: All cars can be placed, both during heavy and normal movement. River Line, south end Lesperance Street Yard to and including Jefferson Barracks: 400 cars cannot be placed during heavy movement, account of Missouri Pacific Yards inadequate. Dupo, Bixby and East Ivory Yards: 300 cars cannot be placed during heavy movement account connecting line's yards inadequate. During normal movement all cars can be placed at each of the above yards.

T. R. R. A.—Did not answer this question.

The other roads state that all cars can be placed, both during normal and heavy movement.

Answers to Question 39

Extent to which carload business for St. Louis consignees is delivered by eastern lines on east bank of river, account of inability of Terminal Railroad Association to receive in switch movement:

B. & O.—Reports none during normal movement. During heavy movement only when cars are badly needed—occasionally.

C. C. C. & St. L.—Reports none except in case of accident or strike, etc.

I. C.—Reports practically none.

Pennsylvania—Reports none except during Switchmen's strike.

Other eastern lines report none either during normal or heavy movement.

Answers to Questions 40 to 67, Inclusive

Carload freight interchange October, 1920:

Answers to these questions have been substituted by routing and density diagrams and by tabulations showing interchange between railroads.

Answers to Questions 68, 69, 70 and 71

Routes of Passenger Trains:

Answers to these questions are shown elsewhere in graphic form as routing and density diagrams.

APPENDIX "C"—FREIGHT HOUSE OPERATING SCHEDULES

Baltimore & Ohio Railroad

The doors are closed against receiving freight at 4:30 p. m. daily, except Saturday, when they are closed at 3:30 p. m. The cars are sealed at 4:45 and pulled from the house at about 5 p. m. Most of the cars leave East St. Louis in trains Nos. 90 and 88 at 7 p. m. and 9 p. m., respectively. The remainder are put in a local train leaving at 7:20 a. m. the following morning. Inbound merchandise trains arrive at 2:45 a. m., the cars being placed at the house at 7 a. m.

Chicago & Alton Railroad

The doors are closed against receiving freight at 4:30 p. m. The cars are sealed at 4:45 and pulled from the house at 5:45 p. m. Chicago and Springfield cars are pulled at 2:15 p. m., leaving East St. Louis on train No. 80 at 3:30 p. m. The other cars go out in a train at 7:30 p. m. Inbound merchandise cars arrive in the Venice and Brooklyn yards in trains at 8 a. m. and 11 a. m. and are set at the house at 1:30 p. m. Local merchandise cars arriving during the night are set before 7 a. m.

Chicago, Burlington & Quincy Railroad

The East Side and West Side houses operate on about the same schedule. The doors are closed against receiving freight at 5 p. m. The cars are sealed between 5 and 6 p. m. Northbound trains leave at 6:45 p. m. and westbound at 9 p. m. South Illinois freight is pulled from the St. Louis house at 4:30 p. m., is handled via Alton Bridge and leaves East St. Louis at 10 p. m. Inbound cars arriving during the night are set before 7 a. m. Early morning arrivals are set at noon.

Cleveland, Cincinnati, Chicago & St. Louis Railway

The doors are closed against receiving freight at 4:30 p. m. The cars are sealed at 4:45 and pulled at 5:10 p. m. Through cars leave East St. Louis at 7 p. m. Local cars do not leave until the following morning at 7:30. The inbound merchandise train arrives about 6 a. m. and is set at the house as soon thereafter as possible.

Chicago, Peoria & St. Louis Railroad

The doors are closed against receiving freight at 4:30 p. m. The cars are sealed at 5 p. m. and pulled at 5:30 p. m. They leave East St. Louis in a train at 6 p. m. The inbound merchandise train arrives between 4 and 5 a. m. and is set at the house before 7 a. m.

Chicago, Rock Island & Pacific Railway

The doors are closed against receiving freight at 5 p. m.; Saturday, 3:30 p. m. The cars are sealed at 5:05 p. m. and pulled at 5:15 p. m. They leave St. Louis in a train at 7:30 p. m. Merchandise cars arriving during the night are placed at the house before 7 a. m.

Illinois Central Railroad

The doors are closed against receiving freight at 4:30 p. m. The cars for the Springfield division are sealed at 3 p. m. and pulled at 3:05 p. m., leaving East St. Louis at 5 p. m. Cars for the St. Louis division are sealed at 5 p. m. and pulled immediately thereafter. These cars leave East St. Louis at 7 p. m. Inbound merchandise cars over the St. Louis division arrive at 4:30 a. m. and 9:30 a. m. and are placed at the house at 8 a. m. and 1 p. m., respectively. Inbound Springfield division trains

arrive at 4:30 p. m. and are placed at the house at 8 a. m. on the following morning.

Louisville & Nashville Railroad

East Side House:

The doors are closed against receiving freight at 4:30 p. m. The cars are sealed at 5 p. m. and pulled about 5:30 p. m. They leave East St. Louis in trains at 8 p. m. and 10 p. m. Inbound merchandise cars arriving before 6:30 a. m. are placed at the house before 7 a. m. Other cars arriving before 3:30 p. m. are placed the same day.

West Side House:

The doors are closed against receiving freight at 4:30 p. m. The cars are sealed at 4:45 p. m. and pulled immediately thereafter, a special run being made to the L. & N. Yard in East St. Louis. These cars leave in the same trains as do cars from the East Side house. Inbound merchandise cars arriving in East St. Louis during the day are placed at the West Side house between 9 p. m. and midnight by the same engine on its return trip from East St. Louis after having made the special run with outbound merchandise cars.

Missouri, Kansas & Texas Railway

The doors are closed against receiving freight at 5 p. m. The cars are sealed at 5:10 p. m. and pulled at 5:40 p. m. The cars leave St. Louis in a train at 9:30 p. m. Inbound merchandise cars arriving before 5 a. m. are placed at the house before 7 a. m.

Missouri Pacific Railroad

Seventh Street House:

The doors are closed against receiving freight at 5 p. m. The cars are sealed at 5:30 p. m. and pulled at 6 p. m., except Kansas City cars, which are pulled at noon. These cars leave on the following trains: No. 77 to 9 p. m., No. 91 at 7:30 a. m., No. 193 at 9:10 a. m., No. 79 at 10 a. m. and No. 195 at 12:50 p. m. Inbound merchandise trains arrive at 12:20 p. m., 1 p. m., 2 p. m., 3:50 p. m., 5 a. m. and 5:45 a. m. The afternoon trains are placed before 7 a. m. the next morning; the morning trains are placed at noon the same day.

Gratiot Street House:

The doors are closed and cars pulled the same as at the Seventh street house. The cars leave in the following trains: No. 63 at 10 p. m., No. 71 at 9 p. m., No. 93 at 7:50 a. m. Inbound merchandise trains arrive at 3 p. m., 8:35 p. m. and 8:50 p. m. These are all placed at the house before 7 a. m. on the following morning.

Biddle Street House:

The doors are closed against receiving freight at 4:30 p. m. The cars are sealed at 5 p. m. and pulled as soon thereafter as possible. These cars leave on the same trains as cars from the two other houses. This being only an outbound house no inbound merchandise is placed here for distribution.

Mobile & Ohio Railroad

The doors are closed against receiving freight at 4:30 p. m. The cars are sealed at 6 p. m. and pulled at 6:25 p. m. The cars leave in trains at 6:45 p. m. and 7:45 p. m. Inbound merchandise cars are placed at the house before 7 a. m.

Pennsylvania Railroad

The doors are closed against receiving freight at 4:30 p. m. The cars are sealed at 5 p. m. and pulled immediately thereafter. Through cars for the East leave at 11 p. m. Cars for Terre Haute leave at 6:30 p. m. Local merchandise cars leave the following morning at 5 a. m. Inbound merchandise cars arriving before 4 a. m. are placed at the house before 7 a. m. Cars arriving later in the morning are placed at noon.

St. Louis-San Francisco Railway

Seventh Street House:

The doors are closed against receiving freight at 5 p. m. The cars are sealed at 5:15 p. m. and pulled at 5:30 p. m. and 6:20 p. m. The cars leave in trains at 9 p. m. and 11 p. m. Inbound merchandise cars arriving before midnight are placed at the house before 7 a. m. Cars arriving after midnight are placed at noon.

Broadway House:

The doors are closed against receiving freight at 5 p. m., on Saturday at 3:30 p. m. The cars are sealed at 5:05 and pulled at 5:15 p. m. They leave at 9 p. m. and 11 p. m. Inbound merchandise cars are placed before 7 a. m. This house is used very little by the St. L.-S. F. for inbound freight.

St. Louis Southwestern Railway

The doors are closed against receiving freight at 5 p. m. The cars are sealed immediately thereafter and pulled at 6 p. m. The cars leave the Valley Yard in a train at 9 p. m. All inbound merchandise cars are placed at the house at 7 a. m.

Southern Railway

The doors are closed against receiving freight at 4:30 p. m. The cars are sealed at 5 p. m. and pulled at 5:30 p. m. The cars leave in trains at 7 p. m. and 10:30 p. m. Inbound merchandise cars arriving before 4:30 a. m. are placed at the house before 7 a. m. Cars arriving later in the morning are placed at 1 p. m.

Toledo, St. Louis & Western Railway

The doors are closed against receiving freight at 4:30 p. m. The cars are sealed at 5 p. m. and pulled before 7 p. m. The cars leave in trains at 7 p. m. and 8 a. m. the following morning. Inbound merchandise cars arrive at 5 a. m. and are placed at the house before 7 a. m.

Wabash Railway**West Side House:**

The doors are closed against receiving freight at 4:30 p. m. The cars for Western points are sealed at 5 p. m. and pulled at 5:30 p. m. Chicago freight, however, is pulled at 2 p. m., leaving on a train at 4:30 p. m. Cars for Eastern points are pulled at 4:30, leaving on a train from Granite City Yard at 7:30 p. m. Cars for the West leave at 8 p. m. All inbound merchandise cars arriving before 6 a. m. are placed at the house at 7 a. m. The house is reset at noon if conditions require.

East Side House:

The same schedule is followed as for the West Side house. Very little West freight, however, is handled in the East Side house.

APPENDIX “D”—FREIGHT HOUSE DATA

Baltimore & Ohio Railroad.

	Length, Feet.	Width, Feet.	Area, Sq. Ft.
Freight House:			
(a) Inbound.....	601	60	34,000
(b) Outbound	601	24	14,000
Platforms:			
(a) Adjacent to house (track side only)—			-
Inbound house—covered	601	8	4,808
Outbound house—covered	601	8	4,808
(b) Island—5 each	601	6	18,030
(c) Others—Transfer Platform	130	20	2,600
Door Openings:			
(a) Track side.....	504		
(b) Team side.....	504		
House tracks, 6 tracks, total 90 cars.			
Team tracks, 8 tracks, total 108 cars.			
Team track driveways (scaled from map):			
Paved	(3) each 655	18	
Unpaved	(1) 380	18	
	(1) 400	18	
	(1) 570	18	
	(1) 530	18	

Trucks :

48—Two-wheel hand, 1200 lbs. to 2000 lbs. capacity.

60—Four-wheel hand, 2500 lbs. capacity.

Cranes (1)—hand crane, 3,000 lbs. capacity.

Cost of handling freight (no overhead), \$0.92 per ton.

Total l. c. l. freight 1919:	St. Louis Proper	Connecting Lines.	Total Tons.
(a) Inbound.....	27,678	41,519	69,197
(b) Outbound	21,680	32,520	54,200
St. Louis proper l. c. l. freight:	1915.	1919.	1920
(a) Inbound.....	25,349	27,678	26,548
(b) Outbound	17,590	21,680	20,548
1920—Total tons handled on basis of business during week	Oct. 18-23, 1920:		
Per square foot freight house—Inbound	1.51 tons	(per year)	
Outbound.....	3.05 tons	(per year)	
Per lineal foot of house tracks.....	26.14 tons	(per year)	

Chicago & Alton Railroad.

	Length, Feet.	Width, Feet.	Area, Sq. Ft.
Freight House:			
(a) Inbound	594	45	26,730
(b) Outbound	594	30	17,820
Platforms:			
(a) Adjacent to house (track side only)—			
Inbound house—covered	594	10	5,940
Inbound house—uncovered	220	10	2,200
Outbound house—uncovered	50	30	1,500
Outbound house—uncovered	210	15	3,150
(b) Island—uncovered	600	10	6,000
(c) Others—None.			
Door Openings:			
(a) Track side.....	829		
(b) Team side.....	270		

House tracks, 5 tracks, total 115 cars.

Team tracks, 5 tracks, total 43 cars.

Team track driveways (scaled from map):

Paved	(1)	700	40
	(1)	200	15
	(1)	320	30
	(1)	470	25
Unpaved	(None)		

Trucks: 20—Two-wheel hand; 16—Four-wheel hand.

Cranes (1)—hand crane, 5-ton capacity.

Cost of handling freight (no overhead), \$0.80 per ton.

	St. Louis Proper	Connecting Lines.	Total Tons.
Total l. c. l. freight, 1919:			
(a) Inbound	17,451	49,493	66,944
(b) Outbound	17,001	32,995	49,996
St. Louis proper l. c. l. freight:	1915.	1919.	1920.
(a) Inbound		17,451	.....
(b) Outbound		17,001	.....

1920—Total tons handled on basis of business during week Oct. 18-23, 1920:

Per square foot freight house—Inbound	1.54 tons (per year)
Outbound.....	1.93 tons (per year)
Per lineal foot of house tracks.....	16.44 tons (per year)

Chicago, Burlington & Quincy Railroad.

East St. Louis: Freight House:	Length, Feet.	Width, Feet.	Area, Sq. Ft.
(a) Inbound } Two Way House.....	470	38	17,860
(b) Outbound }			

Platforms:

(a) Adjacent to house (track side only):	670	8	5,360
(b) Island—None.			
(c) Others—Icing Platform	200	32	6,400

Door Openings:

(a) Track side.....	85
(b) Team side.....	187

House tracks, 2 tracks, 26 cars.

Team tracks, 4 tracks, 62 cars.

Team track driveways (scaled from map):

Paved	(1)	860	30
Unpaved	(1)	550	20
	(1)	500	33

Trucks: 12—Two-wheel hand; 10—Four-wheel hand.

Cranes, none.

Cost of handling freight (no overhead), \$0.99 per ton.

	St. Louis Proper.	Connecting Line.	Total Tons.
Total l. c. l. freight, 1919:			
(a) Inbound	26,110	17,406	43,516
(b) Outbound	107,871	58,085	165,956
St. Louis proper l. c. l. freight:	1915.	1919.	1920.
Total for St. Louis and East St. Louis:			
(a) Inbound	21,902	26,110	29,345
(b) Outbound	94,622	107,871	121,952

1920—Total tons handled on basis of business during Oct. 18-23, 1920:

Per square foot two-way house.....	0.37 tons (per year)
Per lineal foot of house tracks.....	5.35 tons (per year)

Chicago, Burlington & Quincy Railroad.

	Length, Feet.	Width, Feet.	Area, Sq. Ft.
St. Louis House:			
Freight House:			
(a) Inbound, St. Louis.....	780	42	32,760
(b) Outbound, St. Louis.....	780	42	32,760
Platforms:			
(a) Adjacent to house (track side only):			
Inbound house, none.			
Outbound house, none.			
(b) Island	240	20	4,800
(c) Others—Auto platform	150	20	3,000
Door Openings:			
(a) Track side.....	None		
(b) Team side.....	1,105		
House tracks, 5 tracks, 95 cars.			
Team tracks, 8 tracks, 97 cars.			
Team track driveways (scaled from map):			
Paved	(1) 520	20	
	(1) 640	20	
	(1) 490	20	
Unpaved	(None)		
Trucks:			
92—Two-wheel hand.			
164—Four-wheel hand.			
2—Electric trucks.			
Cranes: 2—Hand cranes, 20,000 lbs. capacity.			
Cost of handling freight (no overhead), \$0.99 per ton.			
Total l. c. l. freight, 1919:			

	St. Louis Proper.	Connecting Lines.	Total Tons.
Total for St. Louis and East St. Louis:			
(a) Inbound	26,110	17,406	43,516
(b) Outbound	107,871	58,085	165,956
St. Louis proper l. c. l. freight:	1915	1919.	1920.
Total for St. Louis and East St. Louis:			
(a) Inbound	21,902	26,110	29,345
(b) Outbound	94,622	107,871	121,952
1920—Total tons handled on basis of business during week Oct. 18-23, 1920:			
Per square foot freight house—Inbound	1.37 tons (per year)	St. Louis house	
Outbound.....	3.94 tons (per year)	St. Louis house	
Per lineal foot of house tracks.....	45.80 tons (per year)	St. Louis house	

Cleveland, Cincinnati, Chicago & St. Louis Railway.

	Length, Feet.	Width, Feet.	Area, Sq. Ft.
Freight House:			
(a) Inbound.....	1,000	50	50,000
(b) Outbound.....	347	33	11,451
Platforms:			
(a) Adjacent to house (track side only)—			
Inbound house—covered	1,055	12	12,660
Inbound house—covered	85	8	680
Outbound house—covered	335	8	2,680
Outbound house—uncovered.....	64	40	2,560
Outbound house—uncovered.....	124	15	1,860
(b) Island, outbound—uncovered	1,000	6	6,000
Island, inbound—uncovered	880	6	5,280
(c) Others, none.			

Door Openings:

(a) Track side.....	390	
(b) Team side.....	581	

House tracks, 5 tracks, total 93 cars.

Team tracks, 7 tracks, total 126 cars.

Team track driveways (scaled from map):

Paved	(1)	730	30
	(1)	900	30
	(1)	1,000	30
Unpaved	(None)		

Trucks: 46—Two-wheel hand, 800 lbs. capacity; 47—Four-wheel hand, 2,000 lbs. capacity.

Cranes: 1—Hand crane, 10,000 lbs. capacity.

Cost of handling freight (no overhead) not furnished.

	St. Louis Proper.	Connecting Lines.	Total Tons.
Total l. c. l. freight 1919:			
(a) Inbound.....	53,310	67,899	121,209
(b) Outbound.....	48,515	11,147	59,662
St. Louis proper l. c. l. freight:	1915	1919	1920
(a) Inbound.....	49,385	53,310	57,169
(b) Outbound.....	48,866	48,515	56,954
1920—Total tons handled on basis of business during week	Oct. 18-23, 1920:		
Per square foot freight house—Inbound	2.16 tons (per year)		
Outbound.....	4.22 tons (per year)		
Per lineal foot of house tracks.....	42.57 tons (per year)		

Chicago, Peoria & St. Louis Railroad.

Freight House:	Length, Feet.	Width, Feet.	Area, Sq. Ft.
(a) Inbound } Two-way house—covered	318	39.5	12,571
(b) Outbound }			

Platforms:

(a) Adjacent to house (track side only):

Inbound house—uncovered	318	5	1,590
Outbound house—uncovered.....	76	40	3,040

(b) Island—None.

(c) Others—None.

Door Openings:

(a) Track side.....	120
(b) Team side.....	160

House tracks, 2 tracks, total 20 cars.

Team tracks, 3 tracks, total 51 cars.

Team track driveways (scaled from map):

Paved	(None)	
Unpaved	(1)	1,000 35

Trucks: 10—Two-wheel hand, 1,000 lbs. capacity;

4—Four-wheel hand, 3,000 lbs. capacity.

Cranes: 1—Hand crane, 10,000 lbs. capacity.

Cost of handling freight (no overhead) \$0.88 per ton.

	St. Louis Proper	Connecting Lines.	Total Tons.
Total l. c. l. freight 1919:			
(a) Inbound	12,390	2,324	14,714
(b) Outbound	9,546	1,199	10,745
St. Louis proper l. c. l. freight:	1915	1919	1920
(a) Inbound	3,559	12,390	7,806
(b) Outbound	6,549	9,546	6,400
1920—Total tons handled on basis of business during week	October 18-23, 1920:		
Per square foot freight house—two-way house.....	1.81 tons (per year)		
Per lineal foot of house tracks.....	28.47 tons (per year)		

Chicago, Rock Island & Pacific Railway

Freight House:	Length, Feet.	Width, Feet.	Area, Sq. Ft.
(a) Inbound	575	45	25,875
(b) Outbound	570	24	13,680
Platforms:			
(a) Adjacent to house (track side only)—			
Inbound house—None.			
Outbound house—covered	362	14 }	6,068
Outbound house—uncovered	100	10 }	
(b) Island—uncovered	400	10	4,000
uncovered	135	7	945
uncovered	420	10	4,200
uncovered	70	8	560
uncovered	195	15	2,925
(c) Others—Machinery, uncovered.....	115	20	2,300
Dickson Street, uncovered.....	60	10	600
Dickson Street, uncovered.....	144	10	1,440

Door Openings—See St. L.-S. F. Railroad.

House tracks, 3 tracks, total 38 cars.

Team tracks, 8 tracks, total 102 cars.

Team track driveways (scaled from map):

Paved	(1)	640	25
	(1)	600	25
	(1)	535	25
	(1)	505	25

Unpaved(None)

Trucks—See St. L.-S. F. Railroad.

Cranes—See St. L.-S. F. Railroad.

Cost of handling freight (no overhead) \$0.911 per ton.

	St. Louis Proper.	Connecting Lines.	Total Tons
Total l. c. l. freight 1919:			
(a) Inbound	2,967	2,829	5,796
(b) Outbound	34,950	23,420	58,370
St. Louis proper l. c. l. freight:	1915	1919	1920
(a) Inbound	2,856	2,967	3,135
(b) Outbound	38,912	34,950	34,591

1920—Total tons handled (including St. L.-S. F. and C. & E. I.) based on Oct. 18-23, 1920:

Per square foot freight house—Inbound 1.16 tons (per year)

Outbound..... 8.07 tons (per year)

Per lineal foot of house tracks..... 31.93 tons (per year)

Illinois Central Railroad.

Freight House:	Length, Feet.	Width, Feet.	Area, Sq. Ft.
(a) Inbound	576	50.6	29,483
(b) Outbound	1,008.8	32.2	32,483

Platforms:

(a) Adjacent to house (track side only) —

 Inbound—None.

 Outbound—None.

(b) Island—covered 1,044 12. 12,526

(c) Others—Crane platform, uncovered..... 170 27. 4,590

Door Openings:

(a) Track side..... 1,443

(b) Team side..... 664

House tracks, 5 tracks, total 105 cars.

Team tracks, 7 tracks, total 140 cars.

Teamtrack driveways (scaled from map):

Paved	(1)	600	15
	(1)	1,000	25
	(1)	1,200	25
	(1)	900	35
	(1)	600	30
Unpaved	(None)		

Trucks: 263—Two-wheel hand, 1,500 lbs. capacity;

125—Four-wheel hand, 3,000 lbs. capacity.

Cranes: 1—Hand crane, 40,000 lbs. capacity.

Cost of handling freight (no overhead) \$0.71 per ton.

	St. Louis Proper.	Connecting Lines.	Total Tons.
Total l. c. l. freight 1919:			
(a) Inbound	95,982	173,208	269,190
(b) Outbound	256,958	141,071	398,029
St. Louis proper l. c. l. freight:	1915	1919	1920
(a) Inbound	57,990	95,982	.....
(b) Outbound	166,242	256,958	.....
1920—Total tons handled on basis of business during week Oct. 18-23, 1920:			
Per square foot freight house—Inbound	1.27 tons (per year)		
Outbound.....	3.49 tons (per year)		
Per lineal foot of house tracks.....	35.92 tons (per year)		

St. Louis Electric Terminal Railway Company (Illinois Traction System)

Freight House:	Length, Feet.	Width, Feet.	Area, Sq. Ft.
(a) Inbound {			
(b) Outbound { Two-way house.....	292	35	10,220
Platforms:			
(a) Adjacent to house (track side only):			
Inbound house	255	8	2,040
Outbound house			
(b) Island	200	6	1,200
(c) Others		Irregular shape	1,245

Door Openings:

(a) Track side.

(b) Team side.

House tracks, 2 tracks, total 8 cars.

Team tracks, 1 track, total 4 cars.

Team track driveways (scaled from map)—

Paved

Trucks: 20—Two-wheel hand; 4—Four-wheel hand, capacity 2 tons.

Cranes—None.

Cost of handling freight (no overhead), \$0.80 per ton.

	St. Louis Proper.	Connecting Lines.	Total Tons.
Total l. c. l. freight, 1919:			
(a) Inbound	14,840	1,560	16,400
(b) Outbound	43,680	100	43,780
St. Louis proper l. c. l. freight:	1915	1919	1920
(a) Inbound	6,247	14,840	17,640
(b) Outbound	23,490	43,680	48,890
1920—Total tons handled on basis of business during week Oct. 18-23, 1920:			
Per square foot freight house—two-way house.....	4.23 tons (per year)		
Per lineal foot of house tracks.....	135.20 tons (per year)		

Louisville & Nashville Railroad.

	Length, Feet.	Width, Feet.	Area, Sq. Ft.
East St. Louis House:			
Freight House:			
(a) Inbound } Two-way house.....	562	48	26,976
(b) Outbound }			
Platforms:			
(a) Adjacent to house (track side only):			
Inbound house—1 uncovered.....			2,760
Outbound house—1 uncovered.....			
(b) Island—covered	635	15½	9,842
(c) Others—None.			
Door Openings:			
(a) Track side.....	529		
(b) Team side.....	495		
House tracks, 4 tracks, total 56 cars.			
Team tracks, 3 tracks, total 65 cars.			
Team track driveways (scaled from map)—			
Paved	(1) 615	27	
Unpaved	(1) 750	20	
Trucks: 33—Two-wheel hand, 1,500 lbs. capacity;			
61—Four-wheel hand, 4,000 lbs. capacity.			
Cranes: 1—Hand crane, 20,000 lbs. capacity.			
Cost of handling freight (no overhead), \$0.75 per ton.			
	St. Louis	Connecting	Total
Total l. c. l. freight 1919:	Proper.	Lines.	Tons.
(a) Inbound	4,053	7,665	11,818
(b) Outbound	55,286	22,600	77,886
St. Louis proper l. c. l. freight:	1915	1919	1920
(a) Inbound	2,403	4,053	2,451
(b) Outbound	43,864	55,286	58,314
1920—Total tons handled on basis of business during week Oct. 18-23, 1920:			
Per square foot freight house—two-way house.....	2.18 tons (per year)		
Per lineal foot of house tracks.....	26.24 tons (per year)		

Louisville & Nashville Railroad.

	Length, Feet.	Width, Feet.	Area, Sq. Ft.
St. Louis House:			
Freight House:			
(a) Inbound } Two-way house.....	500	50	25,000
(b) Outbound }			
Platforms:			
(a) Adjacent to house (track side only):			
Inbound house—None.			
Outbound house—None.			
(b) Island—None.			
(c) Others—None.			
Door Openings:			
(a) Track side.....	483		
(b) Team side.....	364		
House tracks, 3 tracks, total 39 cars.			
Team tracks, 2 tracks, total 30 cars.			

FREIGHT HOUSE DATA

Team track driveways (scaled from map)—

Paved	(1)	540	22
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Unpaved (None)

Trucks: 30—Two-wheel hand, 1,500 lbs. capacity;

26—Four-wheel hand, 4,000 lbs. capacity.

Cranes—None.

Cost of handling freight (no overhead), \$0.60 per ton.

Total l. c. l. freight 1919:	St. Louis Proper.	Connecting Lines.	Total Tons.
(a) Inbound	13,344		
(b) Outbound	19,820		

St. Louis proper l. c. l. freight:	1915	1919	1920
(a) Inbound	13,756	13,344	14,651
(b) Outbound	17,471	19,820	20,162

1920—Total tons handled on basis of business during week Oct. 18-23, 1920:

Per square foot freight house—two-way house..... 0.91 tons (per year)

Per square foot height house two way house.....	6.91 tons (per year)
Per lineal foot of house tracks.....	44.53 tons (per year)

Missouri, Kansas & Texas Railway.

Freight House:	Length, Feet.	Width, Feet.	Area, Sq. Ft.
(a) Inbound	392	25.9	10,150
	230	83	19,090
(b) Outbound	400	39	15,600
	100	40 }	
	80	34 }	6,720

Platforms:

(a) Adjacent to house (track side only)—None.

(b) Island	392	11.3	4,430
	392	11.3	4,430
	264	11.3	3,630
	94	6.9	
	165	8.0	1,320
	50	9.0	790
	30	11.3	

(c) Others—None.

Door Openings:

(a) Track side.....	400
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(b) Team side.....	638
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House tracks, 11 tracks, total 111 cars.

Team tracks, 3 tracks, total 42 cars.

Team track driveways (scaled from map)—

Paved	(1)	602	19.5	25,886
	(1)	602	43	11,739

Trucks: 90—Two-wheel hand; 50—Four-wheel hand.

Cranes: 1—Power crane (electric), 15 tons capacity.

Cost of handling freight (no overhead), \$0.96 per ton.

	St. Louis Proper.	Connecting Lines.	Total Tons
Total l. c. l. freight 1919:			
(a) Inbound	5,400	3,600	9,000
(b) Outbound	65,880	43,920	109,800

St. Louis proper l. c. l. freight:	1915	1919	1920
(a) Inbound	4,860	5,400	5,400
(b) Outbound	43,896	65,880	65,880

1920—Total tons handled on basis of business during week Oct. 18-23, 1920:

Per square foot freight house—Inbound	0.41 tons (per year)
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Outbound.....	2.16 tons (per year)
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Per lineal foot of house tracks.....	13.56 tons (per year)
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Missouri Pacific Railroad.

Seventh Street House.		Length,	Width,	Area,
Freight House:		Feet.	Feet.	Sq. Ft.
(a) Inbound	(1)	574	24	28,186
(b) Outbound	(1)	655	22	
(b) Outbound	(2)	553	20	22,120
Platforms:				
(a) Adjacent to house (track side only):				
Inbound house—None.				
Outbound house—None.				
(b) Island	(2)	553	24	26,544
(c) Others—None.				
Door Openings:				
(a) Track side		None		
(b) Team side		827		
House tracks, 8 tracks, total 112 cars.				
Team tracks, 6 tracks, total 114 cars.				
Team track driveways (scaled from map):				
Paved		680	30	
		710	30	
		710	30	
Unpaved		700	25	
		600	30	
		600	25	
Trucks: 93—Two-wheel hand, 1,500 lbs. capacity;				
50—Four-wheel hand, 2,500 lbs. capacity.				
Cranes: 1—Hand derrick, 5 tons capacity.				
Cost of handling freight (no overhead), \$1.136 per ton.				
Total l. c. l. freight 1919:		St. Louis	Connecting	Total
		Proper.	Lines.	Tons.
(a) Inbound		24,192	26,261	50,453
(b) Outbound		44,029	24,663	68,692
St. Louis proper l. c. l. freight:		1915	1919	1920
(a) Inbound		781	24,192	1,022
(b) Outbound		49,074	44,029	50,724
1920—Total tons handled on basis of business during week Oct. 18-23, 1920:				
Per square foot freight house—Inbound		0.80 tons	(per year)	
Outbound		3.93 tons	(per year)	
Per lineal foot of house tracks		19.57 tons	(per year)	

Missouri Pacific Railroad.

Gratiot Street House.		Length,	Width,	Area,
Freight House:		Feet.	Feet.	Sq. Ft.
(a) Inbound		193	43	7,798
		240	52	12,480
(b) Outbound		572	44	25,168
		625	59	32,094
Platforms:				
(a) Adjacent to house (track side only):				
Inbound house—None.				
Outbound house—None.				
(b) Island—None.				
(c) Others—Mach. Load. Platform—uncovered		94	23	2,102
Door Openings:				
(a) Track side		144		
(b) Team side		216		

House tracks, 13 tracks, total 101 cars.

Team tracks, 4 tracks, total 45 cars.

Team track driveways (scaled from map):

Paved	380	30
	500	35

Unpaved (None)

Trucks: 85—Two-wheel hand, 1,500 lbs. capacity;

65—Four-wheel hand, 2,500 lbs. capacity.

Cranes—None.

Cost of handling freight (no overhead), \$1.038.

Total l. c. l. freight 1919:

	St. Louis Proper.	Connecting Lines.	Total Tons
(a) Inbound	31,808	34,529	66,337
(b) Outbound	55,771	31,241	87,012
St. Louis proper l. c. l. freight:	1915	1919	1920
(a) Inbound	1,072	31,808	1,350
(b) Outbound	65,004	55,771	64,357

1920—Total tons handled on basis of business during week Oct. 18-23, 1920:

Per square foot freight house—Inbound	1.30 tons (per year)
Outbound.....	1.83 tons (per year)
Per lineal foot of house tracks.....	32.46 tons (per year)

Missouri Pacific Railroad.

	Length, Feet.	Width, Feet.	Area, Sq. Ft.
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Biddle Street House (Outbound only).

Freight House:

(a) Inbound—None.

(b) Outbound	542	38	20,596
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Platforms:

(a) Adjacent to house (track side only):

Inbound house—None.

Outbound house	562	8	4,496
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(b) Island—None.

(c) Others—None.

Door Openings:

(a) Track side.....	540
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(b) Team side.....	558
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House tracks, 5 tracks, total 60 cars.

Team tracks, 6 tracks, total 38 cars.

Team track driveways (scaled from map):

Paved	20	590
	18	220
	18	170

Unpaved (None)

Trucks: 25—Two-wheel hand, 1,500 lbs. capacity;

23—Four-Wheel hand, 2,500 lbs. capacity.

Cranes—None.

Cost of handling freight (no overhead), \$1.045.

	St. Louis Proper.	Connecting Lines.	Total Tons
Total l. c. l. freight 1919:			
(a) Inbound—None.			
(b) Outbound	63,272	35,442	98,714
St. Louis proper l. c. l. freight:	1915	1919	1920
(a) Inbound—None.			
(b) Outbound	73,920	63,272	72,911

1920—Total tons handled on basis of business during week Oct. 18-23, 1920:

Per square foot freight house—Inbound	None
Outbound.....	2.75 tons (per year)
Per lineal foot of house tracks.....	23.60 tons (per year)

Mobile & Ohio Railroad.

Freight House:	Length, Feet.	Width, Feet.	Area, Sq. Ft.
(a) Inbound } Two-way house.....	700	41	28,700
(b) Outbound }			

Platforms:

(a) Adjacent to house (track side only):

Inbound house } Covered.....	744	8	5,952
Outbound house }			
(b) Island—uncovered	744	15	11,160
(c) Others—Auto platform—uncovered.....	125	10	1,250

Door Openings:

(a) Track side.....	230
(b) Team side.....	315

House tracks, 4 tracks, total 77 cars.

Team tracks, 2 tracks, total 44 cars.

Team track driveways:

Paved	(None)		
Unpaved	(1)	900	30

Trucks: 30—Two-wheel hand, 1,500 lbs. capacity;

40—Four-wheel hand, 2,500 lbs. capacity.

Cranes—None.

Cost of handling freight (no overhead), \$1.08 per ton.

	St. Louis Proper.	Connecting Lines.	Total Tons
Total l. c. l. freight 1919:			
(a) Inbound	3,641	5,825	9,466
(b) Outbound	37,953	31,267	69,220
St. Louis proper l. c. l. freight:	1915	1919	1920
(a) Inbound	3,584	3,641	3,218
(b) Outbound	36,588	37,958	30,335

1920—Total tons handled on basis of business during week Oct. 18-23, 1920:

Per square foot freight house—two-way house..... 2.34 tons (per year)

Per lineal foot of house tracks..... 20.78 tons (per year)

Pennsylvania Railroad.**East St. Louis.**

Freight House:	Length, Feet.	Width, Feet.	Area, Sq. Ft.
(a) Inbound	570	60	34,200
(b) Outbound	540	40	21,600

Platforms:

(a) Adjacent to house (track side only):

Inbound house—covered	570	8	4,560
Outbound house—uncovered	540	9	4,860
(b) Island—uncovered	(1) 570	13	7,410
—uncovered	(1) 540	13	7,020
(c) Others	(1) 97	19	1,843
	(1) 51	8	408
	(1) 84	18	1,512
	(1) 385	12	4,620

Door Openings:

(a) Track side.....	570
(b) Team side.....	570

House tracks, 5 tracks, total 66 cars.

Team tracks, 10 tracks, total 143 cars.

Team track driveways (scaled from map) :

Paved	(1)	1,070	30
	(1)	590	35
	(1)	800	22
	(1)	590	35
	(1)	350	25
	(1)	255	30
Unpaved	(None)		

Trucks: 75—Two-wheel hand, 2,000 lbs. capacity ;

100—Four-wheel hand, 4,000 lbs. capacity.

Cranes: 1 hand crane, 40,000 lbs. capacity.

Cost of handling freight (no overhead), \$0.76 per ton.

	St. Louis Proper.	Connecting Lines.	Total Tons
Total l. c. l. freight 1919:			
(a) Inbound	39,646	69,964	109,610
(b) Outbound	25,672	38,508	64,180
St. Louis proper l. c. l. freight:	1915	1919	1920
(a) Inbound	37,892	39,646	30,537
(b) Outbound	17,664	25,672	21,288
1920—Total tons handled on basis of business during week Oct. 18-23, 1920:			
Per square foot freight house—Inbound	1.73 tons (per year)		
Outbound.....	2.16 tons (per year)		
Per lineal foot of house tracks.....	40.00 tons (per year)		

Pennsylvania Railroad.

Main and O'Fallon House.

Freight House:	Length, Feet.	Width, Feet.	Area, Sq. Ft.
(a) Inbound } Two-way house.....	705	60	42,000
(b) Outbound }			

Platforms:

(a) Adjacent to house (track side only):

Covered	705	5.9	4,054
(b) Island—None.			
(c) Others—uncovered	(1) 86	35.6	2,000

Door Openings:

(a) Track side.....	482
(b) Team side.....	482

House tracks, 3 tracks, total 50 cars.

Team tracks, 3 tracks, total 50 cars.

Team track driveways (scaled from map) :

Paved	(1)	680	35
Paved	(1)	850	35
Unpaved	(None)		

Trucks: 40—Two-wheel hand, 2,000 lbs. capacity :

74—Four-wheel hand, 4,000 lbs. capacity.

Cranes: 1 hand crane, 40,000 lbs. capacity.

Cost of handling freight (no overhead), \$0.806 per ton.

	St. Louis Proper.	Connecting Lines.	Total Tons
Total l. c. l. freight 1919:			
(a) Inbound	40,683	None	40,683
(b) Outbound	18,341	None	18,341
St. Louis proper l. c. l. freight:	1915	1919	1920
(a) Inbound	39,559	40,341	40,525
(b) Outbound	18,977	18,341	9,723

1920—Total tons handled on basis of business during week Oct. 18-23, 1920:

Per square foot freight house—Two-way house:

Outbound	0.45 tons (per year)
Per lineal foot of house tracks.....	9.36 tons (per year)

Seventh Street House.	Length,	Width,	Area,
Freight House:	Feet.	Feet.	Sq. Ft.
(a) Inbound	368	48	17,664
(b) Outbound	650	118	76,700
Platforms:			
(a) Adjacent to house (track side only):			
Inbound	435	7	3,045
Outbound	130	30	3,900
(b) Island—None.			
(c) Others—None.			
Door Openings:			
(a) Track side.....	671		
(b) Team side.....	147		
House tracks, 9 tracks, total 86 cars.			
Team tracks, 5 tracks, total 40 cars.			
Team track driveways (scaled from map):			
Paved	560	23	
	500	27	
	650	35	
Unpaved(None)			
Trucks: 700—Two-wheel hand; 6—Four-wheel hand.			
Cranes: 1 hand crane, 10 ton capacity.			
Cost of handling freight (no overhead), \$0.95 per ton.			
	St. Louis	Connecting	Total
Total l. c. l. freight 1919:	Proper.	Lines.	Tons
(a) Inbound	15,154	7,577	22,731
(b) Outbound	72,606	48,404	121,010
St. Louis proper l. c. l. freight:	1915	1919	1920
(a) Inbound		15,654	18,581
(b) Outbound		136,899	74,267
1920—Total tons handled on basis of business during week Oct. 18-23, 1920:			
Per square foot freight house—Inbound	1.27 tons (per year)		
Outbound.....	1.43 tons (per year)		
Per lineal foot of house tracks.....	38.11 tons (per year)		

Frisco—Rock Island House.	Length, Feet.	Width, Feet.	Area, Sq. Ft.
Freight House:			
(a) Inbound	575	45	25,875
(b) Outbound	570	24	13,680
Platforms:			
(a) Adjacent to house (track side only):			
Inbound—None.			
Outbound—covered	362	14	} 6.068
Uncovered	100	10	
(b) Island—uncovered	400	10	} 4.945
Uncovered	135	7 avg.	
Uncovered	420	10	} 4.760
Uncovered	70	8 avg.	
Uncovered	195	15	2,925
(c) Others—Machinery—uncovered	115	20	2,300
Dickson Street—uncovered.....	60	10	600
Dickson Street—uncovered.....	144	10	1,440
Door Openings:			
(a) Track side.....	1,375½		
(b) Team side..... (None)			

House tracks, total 40 cars.

Team tracks, 3 tracks, total 23 cars.

Team track driveways (scaled from map):

Paved	100	20
Unpaved	140	20
(None)		

Trucks: 110—Two-wheel hand; No Four-wheel hand.

Cranes: 1 hand crane, 10 ton capacity.

Cost of handling freight (no overhead), \$0.911 per ton.

	St. Louis Proper.	Connecting Lines.	Total Tons
Total l. c. l. freight 1919:			
(a) Inbound	510	765	1,275
(b) Outbound	64,294	4,091	68,385
St. Louis proper l. c. l. freight:	1915	1919	1920
(a) Inbound	13,743	15,664	
(b) Outbound	59,592	136,899	

1920—Total tons handled on basis of business during week Oct. 18-23, 1920:

Per square foot freight house—Inbound, including

C. & E. I. and C. R. I. & P. 1.16 tons (per year)

Outbound..... 8.07 tons (per year)

Per lineal foot of house tracks..... 31.93 tons (per year)

St. Louis Southwestern Railway.

Freight House:	Length, Feet.	Width, Feet.	Area, Sq. Ft.
(a) Inbound } Two-way house.....	689½	30	21,976
(b) Outbound }	61½ tapering	12	
Platforms:	Length, Feet.	Width, Feet.	Area, Sq. Ft.
(a) Adjacent to house (track side only):			
Inbound house, covered.....	751	10	7,510
Outbound house, covered.....			
(b) Island, covered	286	12	3,792
Projection	40 tapering	6	
(c) Others	None	None	None
Door Openings:			
(a) Track side.....	552		
(b) Team side.....	552		

House tracks, 5 tracks, total 62 cars.

Team tracks, 7 tracks, total 54 cars.

Team track driveways (scaled from map):

Paved	(1) 670	31
	(1) 720	30
	(1) 360	28
	(1) 630	28
Unpaved		
(None)		

Trucks: 45—Two-wheel hand; 34—Four-wheel hand.

Cranes: 1—hand crane, 25-ton capacity.

Cost of handling freight (no overhead), \$1.15 per ton.

	St. Louis Proper.	Connecting Lines.	Total Tons
Total l. c. l. freight, 1919:			
(a) Inbound	2,123	2,274	4,397
(b) Outbound	42,696	23,642	66,338
St. Louis proper l. c. l. freight:	1915	1919	1920
(a) Inbound	1,429	2,123	2,728
(b) Outbound	30,078	42,696	48,740

1920—Total tons handled on basis of business during week Oct. 18-23, 1920:

Per square foot freight house—two-way house..... 3.24 tons (per year)

Per lineal foot of house tracks..... 28.62 tons (per year)

Southern Railway.

Broadway House (Inbound)—	Length, Feet.	Width, Feet.	Area, Sq. Ft.
Freight House:			
(a) Inbound house (only).....	357	36	12,852
Platforms:			
(a) Adjacent to house (track side only):			
Inbound house (only)—uncovered.....	452	8	3,616
(b) Island—None.			
(c) Others—uncovered	66	16	1,056
Door Openings:			
(a) Track side (Broadway and Sixth Street).....	310		
(b) Team side (Broadway and Sixth Street).....	318		
House tracks, 2 tracks, total 25 cars.			
Team tracks, 1 track, total 5 cars.			
Team track driveways (scaled from map):			
Paved	460	irregular	2,616
Unpaved	(None)		
Trucks (Broadway and Sixth street): 63—Two-wheel hand; 32—Three-wheel hand; 1—Four-wheel hand.			
Cranes—None.			
Cost of handling freight (no overhead), \$0.85 per ton.			
Total l. c. l. freight, 1919:	St. Louis Proper.	Connecting Lines.	Total Tons
Inbound	32,580	6,782	39,362
St. Louis proper l. c. l. freight:	1915	1919	1920
Inbound	17,514	32,580	28,020
1920—Total tons handled on basis of business during week Oct. 18-23, 1920:			
Per square foot freight house—Inbound	3.08 tons (per year)		
Per lineal foot of house tracks.....	37.74 tons (per year)		

Southern Railway.

Sixth Street House (Outbound)—	Length, Feet.	Width, Feet.	Area, Sq. Ft.
Freight House:			
(b) Outbound	260	24	6,240
Platforms:			
(a) Adjacent to house (track side only):			
Outbound house—covered	80	12	960
(b) Island—None.			
(c) Others—uncovered.	65	9	585
Door Openings:			
(a) Track side (Broadway and Sixth Street).....	310		
(b) Team side (Broadway and Sixth Street).....	318		

House tracks, 4 tracks, total 65 cars.

Team tracks, 3 tracks, total 43 cars.

Team track driveways (scaled from map):

Paved(None)

Unpaved	665	24	15,960
	240	32	7,680

Trucks (Broadway and Sixth street): 63—Two-wheel hand;
32—Three-wheel hand; 1—Four-wheel hand.

Cranes—None.

Cost of handling freight (no overhead), \$0.85 per ton.

	St. Louis Proper.	Connecting Lines.	Total Tons
Total l. c. l. freight, 1919:			
(b) Outbound	29,762	26,420	56,182
St. Louis proper l. c. l. freight:	1915	1919	1920
(b) Outbound	32,353	29,762	41,997

1920—Total tons handled on basis of business during week Oct. 18-23, 1920:

Per square foot freight houses—Outbound..... 5.63 tons (per year)

Per lineal foot of house tracks..... 12.80 tons (per year)

Terminal Railroad Association.

Freight House:	Length, Feet.	Width, Feet.	Area, Sq. Ft.
(a) Inbound	597	40	25,670
(b) Outbound	622¼	129½	57,670

Platforms:

(a) Adjacent to house (track side only):

Inbound house—None.

Outbound house—None.

(b) Island	394½	7½	3,520
	622¼	10	6,223

(c) Others—None.

Door Openings:

(a) Track side..... 150

(b) Team side..... 450

House tracks, 6 tracks, total 100 cars.

Team tracks, none.

Team track driveways, none.

Trucks: 40—Two-wheel hand; 50—Four-wheel hand.

Cranes: 1 hand crane, 20-ton capacity; 1 hand crane, 10 tons capacity; 1 hand crane, 6 tons capacity.

Cost of handling freight (no overhead), \$0.80 per ton.

	St. Louis Proper.	Connecting Lines. Not Available	Total Tons
Total l. c. l. freight, 1919:			
(a) Inbound	42,763		
(b) Outbound	34,011		
St. Louis proper l. c. l. freight:	1915	1919	1920
(a) Inbound	55,864	42,763	48,171
(b) Outbound	46,011	34,011	32,465

Toledo, St. Louis & Western Railway.

Freight House:	Length, Feet.	Width, Feet.	Area, Sq. Ft.
(a) Inbound	410	42	17,220
(b) Outbound			

Platforms:

(a) Adjacent to house (track side only):			
Covered	410	6	2,460
(b) Island—uncovered	400	6	2,400
(c) Others—None.			

Door Openings:

(a) Track side.....	192
(b) Team side.....	192

House tracks, 4 tracks, total 40 cars.

Team tracks, 2 tracks, total 50 cars.

Team track driveways (scaled from map):

Paved	(1)	630	25
Unpaved	(1)	600	20

Trucks: 22—Two-wheel hand; 16—Four-wheel hand.

Cranes: 1 hand crane, 20-ton capacity.

Cost of handling freight (no overhead), \$0.8761 per ton.

Total l. c. l. freight, 1919—data not available.

St. Louis Proper l. c. l. freight data not available.

1920—Total tons handled on basis of business during week Oct. 18-23, 1920:

Per square foot of two-way freight house.....	2.27 tons (per year)
Per lineal foot of house tracks.....	24.47 tons (per year)

Wabash Railway.

East St. Louis House: Freight House:	Length, Feet.	Width, Feet.	Area, Sq. Ft.
(a) Inbound	652	50	32,600
(b) Outbound	820	24	19,680

Platforms:

(a) Adjacent to house (track side only):			
Inbound house	84	16	1,344
Outbound house.....	361	6	2,166
(b) Island	700	10	7,000
(c) Others	50	45	2,250

Door Openings:

(a) Track side.....	615
(b) Team side.....	615

House tracks, 4 tracks, total 55 cars.

Team tracks, 4 tracks, total 115 cars.

Team track driveways (scaled from map):

Paved	(1)	1,320	28
	(1)	1,145	28
Unpaved	(None)		

Trucks: 50—Two-wheel hand; No Four-wheel hand.

Cranes: 1 hand crane, 20-ton capacity.

Cost of handling freight (no overhead), \$1.00 per ton.

APPENDIX "E"—PRESENT METHOD OF CARLOAD INTERCHANGE

Distribution of Carload Freight—October, 1920

Baltimore & Ohio Railroad, October, 1920.

Total carloads inbound and outbound..... 10,179

Inbound.

Loaded beyond switching district..... 4,841

Loaded within switching district for other roads..... 546

Total 5,387

For setting at B. & O. Freight House.....

549

For local delivery on B. & O.....

0

For delivery to other roads: (L.—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total.
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
A. & S.....							43				43
C. & A.....									1	524	525
C. & E. I.....				1							1
C. B. & Q.—East.....										183	183
C. C. C. & St. L.....						2					2
C. P. & St. L.....						4					4
E. St. L. Jct.....									171		171
I. C.....						40					40
I. T. S.....			1								1
L. & M.....				3							3
L. & N.....										17	17
M. P.—Dupo.....		2			22	188					212
M. & O.....					1	29					30
Penn.....						1					1
St. L.—S. W.....				1	130		2	2			136
St. L.—T. & E.....				13							13
Southern.....									9	12	21
T. R. R. A.....	90		678		10						778
Wabash—East.....		2		324							326
Totals.....	90	4	679	342	34	394	45	2	181	736	2,507

Total for local delivery in East St. Louis.....

1,029

Total for through movement.....

1,478

St. Louis:

C. B. & Q.—West.....			4	16	4	10					34
C. R. I. & P.....			5	146							151
L. & N. House.....			25								25
M. K. & T.....			23	150							173
M. P.—West.....	177	225		6							408
M. P.—South.....					254						254
St. L.—S. F.....	47	255	20	8							330
T. R. R. A.....	423		197		127						747
Wabash—West.....	20		4	180		5					209
Totals.....	667	480	278	506	385	15					2,331

Total for local delivery in St. Louis.....

1,330

Total for through movement.....

1,001

Total delivered.....

5,387

Baltimore & Ohio Railroad, October, 1920.

Total carloads inbound and outbound..... 10,179

Outbound.

For movement beyond switching district..... 4,528

For delivery within switching district..... 264

4,792

Loaded at B. & O. Freight House..... 439

Loaded locally on B. & O..... 10

Received from other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total.
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
A. & S.....								3			3
C. & A.....	36	1							15	380	432
C. & E. I.....		1	1	1							3
C. B. & Q.....									9	81	90
C. C. C. & St. L.....			1			8					9
C. P. & St. L.....					13	8					21
E. St. L. & Sub.....						3	1				4
E. St. L. Jct.....										750	750
I. C.	1	4			5	18					28
L. & M.....				5							5
L. & N.....									31	8	39
M. P.—Dupo.....					3	554		1			558
M. & O.....					1	71		16			88
Penn.....		1			17	3					21
St. L.—S. W.....			1	168		31		32			232
St. L.—T. & E.....				15							15
Southern.....									7	17	24
T., St. L. & W.....						1	2	1			4
T. R. R. A.....		3	46	393		44					486
Wabash—East.....					3	9					12
Totals.....	37	10	49	582	42	750	3	53	62	1,236	2,824

Total for local delivery on B. & O..... 193

Total for through movement..... 2,631

St. Louis:

C. B. & Q—West.....						18					18
C. R. I. & P.....				50							50
Manufacturers.....						30					30
M. K. & T.....				313							313
M. P.—West.....	57	380									437
M. P.—South.....					4	120					124
St. L.—S. F.....		170									170
T. R. R. A.....		95	5	72		35					207
Wabash—West.....		5	5	105		55					170
Totals.....	57	650	10	540	4	258					1,519

Total for local delivery on B. & O..... 71

Total for through movement on B. & O..... 1,448

Total received..... 4,792

Chicago & Alton Railroad, October, 1920.

Total carloads, inbound and outbound..... 11,408

Inbound.

Loaded beyond switching district..... 5,365

Loaded beyond switching district for other roads..... 81

Total 5,446

For setting at C. & A. Freight House..... 460

For local delivery on C. & A..... 0

For delivery to other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	
B. & O.....	87	1	.....	.....	.....	.....	15	380	483
C. B. & Q.—East.....	.....	1	.....	.....	.....	.....	.....	6	7
C. & E. I.....	.....	35	.....	5	.....	.....	.....	.....	40
C. C. C. & St. L.....	.....	.....	.....	.....	.....	.....	.....	13	13
C. P. & St. L.....	.....	.....	.....	.....	.....	1	.....	.....	1
E. St. L. & Sub.....	5	3	1	.....	1	.....	.....	.....	10
E. St. L. Jct. ....	.....	.....	.....	.....	.....	.....	734	.....	734
I. C.	1	17	.....	.....	3	245	.....	.....	266
I. T. S.....	1	1	.....	2	.....	.....	.....	.....	4
L. & M.....	.....	1	.....	.....	.....	.....	.....	.....	1
L. & N. ....	.....	11	.....	.....	.....	.....	12	154	177
M. P.—Dupo .....	.....	10	.....	.....	13	261	.....	.....	284
M. & O.....	.....	.....	.....	.....	1	199	.....	.....	200
Penn. ....	.....	.....	.....	.....	13	79	.....	.....	92
St. L. & O'F.	1	.....	.....	.....	.....	.....	.....	.....	1
St. L. S. W.....	.....	6	.....	.....	.....	248	.....	.....	254
Southern	6	2	.....	.....	.....	.....	86	209	303
T. St. L. & W.....	.....	.....	.....	.....	.....	.....	2	40	42
T. R. R. A.	293	.....	216	.....	83	.....	.....	.....	592
Wabash—East .....	.....	.....	.....	.....	.....	.....	1	9	10
River .....	.....	.....	.....	.....	.....	13	.....	.....	13
Totals	394	88	217	7	114	1046	850	811	3527

Total for local delivery in East St. Louis..... 1,575

Total for through movement..... 1,952

St. Louis:

C. B. & Q.—West.....	.....	.....	.....	.....	22	.....	.....	.....	22
C. R. I. & P.....	.....	.....	.....	.....	8	.....	.....	.....	8
L. & N. Hse.....	.....	.....	5	.....	.....	.....	.....	.....	5
M. K. & T.....	.....	.....	4	88	.....	.....	.....	.....	92
M. P.—West	105	44	.....	.....	.....	.....	.....	.....	149
M. P.—South .....	.....	.....	.....	.....	152	.....	.....	.....	152
St. L.—S. F.....	69	80	.....	.....	.....	.....	.....	.....	149
St. L. S. W. House.....	.....	.....	.....	.....	14	.....	.....	.....	14
T. R. R. A.....	456	.....	160	.....	236	.....	.....	.....	852
Wabash—West .....	.....	.....	.....	.....	8	8	.....	.....	16
Totals	630	124	169	88	440	8	.....	.....	1459

Total for local delivery in St. Louis..... 1,239

Total for through movement..... 220

Total delivered 5,446

Chicago & Alton Railroad, October, 1920.

Total carloads, inbound and outbound..... 11,408

Outbound.

For movement beyond switching district..... 5,880

For delivery within switching district..... 82

Total 5,962

Loaded at C. & A. Freight House..... 420

Loaded locally on C. & A..... 13

Received from other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	
B. & O.....							1	524	525
C. & E. I.....				6					6
C. B. & Q.—East.....							9		9
C. C. C. & St. L.....		1					2	55	58
C. P. & St. L.....					1	3			4
E. St. L. & Sub.				30					30
E. St. L. Jct.....								619	619
I. C.						96			96
L. & M.				2					2
L. & N.								300	300
M. P.—Dupo						1007			1007
M. & O.....		1				344			345
Penn.					1	85			86
St. L. S. W.....						172			172
St. L. T. & E.....				92					92
Southern		1					1	822	824
T. St. L. & W.....		1						92	93
T. R. R. A.....	1	1	7	189	1	38			237
Wabash—East						1			1
Totals	1	5	7	319	3	1746	4	2421	4506

Total for local delivery on C. & A..... 15

Total for through movement on C. & A..... 4,491

St. Louis:

C. B. & Q.—West.....					40			40
C. R. I. & P.....				15				15
Mfrs.					15			15
M. K. & T.....				75				75
M. P.—West	11	99						110
M. P.—South					65			65
St. L.—S. F.....	53	351						404
T. R. R. A.....		57		160	25			242
Wabash—West	3	4			50			57
Totals	67	511		250	195			1023

Total for local delivery on C. & A..... 67

Total for through movement on C. & A..... 956

Total received 5,962

Chicago, Burlington & Quincy Railroad (East), October, 1920.

Total carloads inbound and outbound..... 12,740

Inbound.

Loaded beyond switching district..... 6,878
Loaded within switching district for other roads..... 10

Total 6,888

For setting at C. B. & Q., East St. Louis Freight House..... 270

For local delivery on C. B. & Q..... 0

From Hannibal Division to Paducah Division via Alton Bridge..... 691

From Paducah Division to Hannibal Division via Alton Bridge..... 1,587

For delivery to other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	
A. & S.....	1								1
B. & O.....							9	81	90
C. & A.....								9	9
C. & E. I.....		13							13
C. C. C. & St. L.....		2						75	77
C. P. & St. L.....						5			5
E. St. L. & Sub.....	4	1							5
E. St. L. Jct.....		25					1292		1317
I. C.		90				422			512
L. & N.		24					5	215	244
M. & O.....		28				197			225
M. P.—Dupo		4		2	5	117			128
Penn.		7			6	90			103
St. L. & O'F.....	1								1
St. L. SW.....		2			1	108			111
St. L. T. & E.....		3							3
Southern	1	16				7	30	267	321
T. St. L. & W.....		1				67			68
T. R. R. A.....	536		1		35				572
Wabash—East						5			5
River						2			2
Totals	543	216	1	2	47	1020	1336	647	3812

Total for local delivery in East St. Louis..... 1,927

Total for through movement..... 1,885

St. Louis:

C. B. & Q.—West.....					16				16
M. K. & T.....				5					5
M. P.—West	70	23							93
M. P.—South					20				20
St. L.—S. F.....	5	35							40
T. R. R. A.....	93		138		85				316
Wabash—West	23	5		10					38
Totals	191	63	138	15	121				528

Total for local delivery in St. Louis..... 450

Total for through movement..... 78

Total delivered 6,888

Chicago, Burlington & Quincy Railroad (East), October, 1920.

Total carloads, inbound and outbound..... 12,740

Outbound.

For movement beyond switching district..... 5,650

For delivery within switching district..... 202

Total 5,852

Loaded at C. B. & Q.—East St. Louis Freight House 86

Loaded locally on C. B. & Q. 0

From Hannibal Division to Paducah Division via Alton Bridge..... 691

From Paducah Division to Hannibal Division via Alton Bridge..... 1,587

For delivery to other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	
A. & S.....				5					5
B. & O.....							183		183
C. & A.....		1					6		7
C. & E. I.....				4					4
C. C. C. & St. L.....							76		76
C. P. & St. L.....					9	1			10
E. St. L. & Sub.....						4			4
E. St. L. J'ct.....							199		199
I. C.		21			4	267		39	331
L. & M.			4	12					16
L. & N.							2	375	377
M. & O.....		2		2	1	264			269
M. P.—Dupo			83			91			174
Penn.						11			11
St. L. S. W.....				2		77			79
St. L. T. & E.....				11					11
Southern					4	15	10	820	849
T. St. L. & W.....					3	16		1	20
T. R. R. A.....		11	22	44		28			105
Wabash—East						5			5
Totals		35	109	80	21	779	12	1699	2735

Total for local delivery on C. B. & Q..... 142

Total for through movement on C. B. & Q..... 2,593

St. Louis:

C. B. & Q.—West.....					5			5
M. K. & T.....				30				30
Mfrs.						5		5
M. P.—South					60	398		458
St. L.—S. F.....		9						9
T. R. R. A.....		224		17		5		246
Totals		233		47	60	413		753

Total for local delivery on C. B. & Q..... 60

Total for through movement on C. B. & Q..... 693

Total received 5,852

Chicago, Burlington & Quincy Railroad (West), October, 1920.

Total carloads, inbound and outbound..... 10,569

Inbound.

Loaded beyond switching district..... 4,897
Loaded within switching district for other roads..... 308

Total 5,205

For setting at C. B. & Q. Freight House and Team Tracks..... 1,097

For local delivery on C. B. & Q. 341

For delivery to other roads: (L—Local, T—Through).

St. Louis:

Roads.	Terminal		Merchants		Wiggins		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	
C. R. I. & P.....			3	22					25
I. T. S.			5	26	2	1			35
L. & N. House.....			18						18
Mfrs.					130				130
M. K. & T.....			10	4			1	30	45
M. P.—West			90	1					91
M. P.—South					377	107			484
St. L.-S. F.....			44	194					238
River						5			5
T. R. R. A.....			832		263				1095
Wabash—West			101	2			74	20	197
Totals			1103	249	772	113	75	50	2362

Total for local delivery in St. Louis..... 1,950

Total for through movement 412

East St. Louis:

B. & O.						18			18
C. & A.....						40			40
C. B. & Q.—East.....						5			5
C. C. C. & St. L.....						30			30
I. C.			15			410			425
L. & N.....			24			20			44
M. & O.			16			173			189
M. P.—Dupo						210			210
Penn.					30	45			75
St. L. SW.			5	24		43			72
Southern			19	5	10	95			129
T. R. R. A.			95		73				168
Totals			174	29	113	1089			1405

Total for local delivery in East St. Louis..... 287

Total for through movement 1,118

Total delivered 5,205

Chicago, Burlington & Quincy Railroad (West), October, 1920.

Total carloads, inbound and outbound..... 10,569

Outbound.

For movement beyond switching district..... 4,439

For delivery within switching district..... 925

Total 5,364

Loaded at C. B. & Q. Freight House and Team Tracks..... 1,458

Loaded locally on C. B. & Q. 798

Received from other roads: (L—Local, T—Through).

St. Louis:

Roads.	Terminal		Merchants		Wiggins		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	
C. R. I. & P.....			11	27					38
Mfrs.			2	58					60
M. K. & T.....			2				6	18	26
M. P.—West			44	7					51
M. P.—South					253	309			562
St. L.-S. F.....			112	356					468
T. R. R. A.....	10	79	23	129	52	113			406
Wabash—West			2	6			103	6	117
Totals	10	79	196	583	305	422	109	24	1728

Total for local delivery on C. B. & Q..... 620

Total for through movement on C. B. & Q..... 1,108

East St. Louis:

B. & O.....			4	16	4	10			34
C. & A.					22				22
C. & E. I.....				30					30
C. B. & Q.—East					16				16
C. C. C. & St. L.....					25				25
I. C.					34	138			172
L. & M.....				20					20
L. & N.....					10				10
M. & O.....						240			240
M. P.—Dupo					15	225			240
Penn.			14		15	55			84
St. L. S. W.....			16			120			136
St. L. T. & E.....				125					125
Southern					65	28			93
T. R. R. A.....				60	5	8			73
Wabash—East					60				60
Totals			34	251	271	824			1380

Total for local delivery on C. B. & Q. 305

Total for through movement..... 1,075

Total received..... 5,364

Cleveland, Cincinnati, Chicago & St. Louis Railway, October, 1920.

Total carloads, inbound and outbound..... 10,897.....

Inbound.

Loaded beyond switching district..... 5,773

Loaded within switching district for other roads..... 111

Total 5,884

For setting at C. C. C. & St. Louis Freight House..... 2,034

For local delivery on C. C. C. & St. L..... 0

For delivery to other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	
A. & S.	14	.....	4	.....	2	.....	.....	.....	20
B. & O. ....	.....	.....	1	.....	.....	7	.....	.....	8
C. & A. ....	.....	1	.....	.....	.....	.....	2	55	58
C. & E. I. ....	.....	1	.....	.....	.....	.....	.....	.....	1
C. B. & Q.—East .....	.....	.....	.....	.....	.....	.....	.....	76	76
C. P. & St. L. ....	.....	.....	.....	.....	.....	1	.....	.....	1
E. St. L. & Sub.	3	1	.....	1	.....	.....	.....	.....	5
E. St. L. Jct. ....	.....	.....	.....	.....	.....	.....	76	.....	76
I. C. ....	.....	.....	.....	.....	.....	.....	3	47	50
I. T. S. ....	.....	1	.....	.....	.....	.....	.....	.....	1
L. & N. ....	.....	.....	.....	.....	.....	.....	18	16	34
M. P. —Dupo	6	5	.....	.....	65	192	.....	.....	268
M. & O. ....	.....	.....	.....	.....	1	29	.....	.....	30
Penn.	2	.....	.....	.....	4	3	.....	.....	9
S. L. & O'F. ....	.....	1	.....	.....	.....	.....	.....	.....	1
St. L. S. W. ....	.....	2	.....	.....	.....	141	.....	.....	143
St. L. T. & E.	1	3	.....	.....	.....	.....	.....	.....	4
Southern .....	.....	.....	.....	.....	.....	.....	19	9	28
T. St. L. & W. ....	.....	.....	.....	.....	.....	1	.....	.....	1
T. R. R. A.	86	.....	260	.....	94	1	.....	.....	441
Wabash—East .....	.....	1	.....	.....	.....	2	.....	.....	3
River .....	.....	.....	.....	.....	.....	1	.....	.....	1
Totals	112	16	265	1	166	378	118	203	1259

Total for local delivery in East St. Louis..... 661

Total for through movement..... 598

St. Louis:

C. B. & Q.—West .....	.....	.....	.....	.....	25	.....	.....	.....	25
C. R. I. & P. ....	.....	.....	.....	150	.....	.....	.....	.....	150
M. K. & T. ....	.....	.....	180	170	.....	.....	.....	.....	350
M. P.—West	162	419	.....	.....	.....	.....	.....	.....	581
M. P.—South .....	.....	.....	.....	.....	122	.....	.....	.....	122
St. L.—S. F.	110	180	.....	.....	.....	.....	.....	.....	290
T. R. R. A.	610	.....	121	.....	201	.....	.....	.....	932
Wabash—West .....	.....	.....	.....	.....	126	15	.....	.....	141
Totals	882	599	301	320	474	15	.....	.....	2591

Total for local delivery in St. Louis..... 1,657

Total for through movement..... 934

Total delivered 5,884

Cleveland, Cincinnati, Chicago & St. Louis Railway, October, 1920.

Total carloads, inbound and outbound..... 10,897

Outbound.

Fore movement beyond switching district..... 4,909

For delivery within switching district..... 104

Total 5,013

Loaded at C. C. C. & St. Louis Freight House..... 560

Loaded locally on C. C. C. & St. L..... 0

Received from other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	
B. & O.						2			2
C. & A.								13	13
C. & E. I.			2						2
C. B. & Q.—East.....		2						75	77
C. P. & St. L.....						5			5
E. St. Louis Jct.								415	415
I. C.		5			2	20	1		28
L. & M.				1					1
L. & N.							1	6	7
M. P.—Dupo					1	626			627
M. & O.					2	116			118
Penn.	1	1							2
St. L.-S. W.....						261			261
St. L.-T. & E.....				3					3
T. St. L. & W.....						1			1
T. R. R. A.....		1	62	331	2	59			455
Wabash—East						13			13
	1	9	64	335	7	1103	2	509	2030

Total for local delivery on C. C. C. & St. L..... 74

Total for through movement on C. C. C. & St. L..... 1,956

St. Louis:

C. B. & Q.—West					30			30
C. R. I. & P.....				170				170
Mfrs.						95		95
M. K. & T.				272				272
M. P.—West		665						665
M. P.—South					6	44		50
St. L.-S. F.....	4	457						461
T. R. R. A.....		85	20	245		35		385
Wabash—West		25		180		90		295
	4	1232	20	867	6	294		2423

Total for local delivery on C. C. C. & St. L..... 30

Total for through movement on C. C. C. & St. L..... 2,393

Total received 5,013

Chicago & Eastern Illinois Railroad, October, 1920.

Total carloads, inbound and outbound..... 5,762

Inbound.

Loaded beyond switching district..... 2,667

Loaded within switching district for other roads..... 0

Total 2,667

For setting at C. & E. I. Freight House..... 470

For local delivery on C. & E. I..... 0

For delivery to other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	
B. & O.....		1	1	1					3
C. & A.....				6					6
C. B. & Q.—East				4					4
C. C. C. & St. L.....			2						2
C. P. & St. L.....				2					2
E. St. L. & Sub.....			2						2
E. St. L. Jct.....			8						8
I. T. S.....			36	21					57
L. & N.....			1	1					2
M. P.—Dupo			8	48					56
M. & O.....				4					4
St. L. S. W.....				39					39
St. L.—O'F.			1	1					2
Southern			12	1					13
T. R. R. A.....	1		150	2					153
Totals	1	1	221	130					353

Total for local delivery in East St. Louis..... 222

Total for through movement..... 131

St. Louis:

C. B. & Q.—West.....			30						30
C. R. I. & P.....			25						25
L. & N. House.....		30							30
M. K. & T.			85						85
M. P.—West		34	120						154
M. P.—South				15					15
St. L.—S. F.....			15				276	650	941
T. R. R. A.....			534						534
Wabash—West			15	15					30
Totals			613	290	15		276	650	1844

Total for local delivery in St. Louis..... 940

Total for through movement..... 904

Total delivered 2,667

Chicago & Eastern Illinois Railroad, October, 1920.

Total carloads, inbound and outbound..... 5,762

Outbound.

For movement beyond switching districts..... 3,095

For delivery within switching districts..... 0

Total 3,095

Loaded at C. & E. I. Freight House..... 215

Loaded locally on C. & E. I..... 0

Received from other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal Merchants		Wiggins		Direct		Total
	L.	T.	L.	T.	L.	T.	
C. & A.....	35		6				41
C. B. & Q.—East.....	13						13
C. C. C. & St. L.....	1						1
E. St. L. Jct.....			15				15
I. C.....			1				1
L. & N.....			22				22
M. P.—Dupo.....			347				347
M. & O.....	22		51				73
Penn.....			4				4
St. L.—S. W.....	1		318				319
St. L.—T. & E.....			4				4
Southern.....			27				27
T. R. R. A.....	8		64		11		83
Totals.....	80		859		11		950

Total for local delivery on C. & E. I..... 0

Total for through movement on C. & E. I..... 950

St. Louis:

C. R. I. & P.....			100				100
Mfrs.....					30		30
M. K. & T.....			150				150
M. P.—West.....	128						128
M. P.—South.....					60		60
St. L.—S. F.....						1276	1276
T. R. R. A.....	48		46		50		144
Wabash—West.....			42				42
Totals.....	176		338		140	1276	1930

Total for local delivery on C. & E. I..... 0

Total for through movement on C. & E. I..... 1,930

Total received..... 3,095

Chicago, Peoria & St. Louis Railroad, October, 1920.

Total carloads, inbound and outbound..... 3,815

Inbound.

Loaded beyond switching district..... 1,581
 Loaded within switching district for other roads..... 0
 Total 1,581

For setting at C. P. & St. L. Freight House..... 128
 For local delivery on C. P. & St. L..... 0

For delivery to other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
A. & S.....							90				90
B. & O.....					13	8					21
C. & A.....					1	3					4
C. B. & O.—East.....					9	1					10
C. C. C. & St. L.....						5					5
E. St. L. Jct.....									86		86
I. C.						79					79
I. T. S.				1							1
L. & M.										6	6
L. & N.					1	20					21
M. P.—Dupo.....						62					62
M. & O.....						44					44
Penn.						17					17
St. L.—S. W.....						45					45
Southern									133	60	193
T. St. L. & W.....										7	7
T. R. R. A.....			62		62						124
Totals			62	1	86	284	90		219	73	815

Total for local delivery in East St. Louis..... 457

Total for through movement..... 358

St. Louis:

C. R. I. & P.....				14							14
M. K. & T.....				42							42
M. P.—West	15	53									68
St. L.—S. F.....	81	61		1							143
T. R. R. A.....	141										141
Wabash—West	3		117		110						230
Totals	240	114	117	57	110						638

Total for local delivery in St. Louis..... 467

Total for through movement..... 171

Total delivery 1,581

Chicago, Peoria & St. Louis Railroad, October, 1920.

Total carloads inbound and outbound..... 3,815

Outbound.

For movement beyond switching district..... 2,176

For delivery within switching district..... 58

Total 2,234

Loaded at C. P. & St. L. freight house..... 206

Loaded locally on C. P. & St. L. 72

Received from other roads: (L.—Local, T—Through):

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
B. & O.....						4					4
C. & A.....						1					1
C. & E. I.....				2							2
C. B. & Q.—East.....						5					5
C. C. C. & St. L.....						1					1
E. St. L. & Sub.....			5	1		1					7
E. St. L. Jct.....										31	31
I. C.						41					41
L. & M.....									41		41
L. & N.....						93					93
M. P.—Dupo					6	507		3			516
M. & O.....						204		6			210
Penn.			1			29					30
St. L.-S. W.....				1	1	169					171
Sou.						1			1	230	232
T. St. L. & W.....										4	4
T. R. R. A.....		5	1	63	1	5					75
Wab.—East					2	6					8
Totals		6	6	67	10	1,067		9	42	265	1,472

Total for local delivery on C. P. & St. L..... 58

Total for through movement on C. P. & St. L..... 1,414

St. Louis:

Mfrs.						45					45
M. K. & T.....				30							30
M. P.—West		58									58
M. P.—South						40					40
St. L.-S. F.....		171									171
T. R. R. A.....		33		62		20					115
Wab.—West				25							25
Totals		262		117		105					484

Total for local delivery on C. P. & St. L..... 0

Total for through movement on C. P. & St. L. 484

Total received 2,234

Chicago, Rock Island & Pacific Railway, October, 1920.

Total carloads, inbound and outbound..... 5,400

Inbound.

Loaded beyond switching district..... 2,627

Loaded within switching district for other roads..... 92

Total 2,719

For setting at C. R. I. & P. freight house..... 154

For local delivery on C. R. I. & P..... 0

For delivery to other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
C. B. & Q.—West			11	27							38
I. T. S.				4							4
L. & N. House.....			2								2
Mfgs.					45						45
M. K. & T.....			2	1							3
M. P.—West			55	6							61
M. P.—South					49	1					50
St. L.—S. F.....			36	20							56
T. R. R. A.....			388								388
Wabash—West			17	2					151		170
Totals			511	60	94	1			151		817

Total for local delivery in St. Louis..... 756

Total for through movement..... 61

East St. Louis:

B. & O.....				50							50
C. & A.....				15							15
C. & E. I.....				100							100
C. C. C. & St. L.....				170							170
E. St. L. Jct.....			205								205
I. C.				85							85
L. & N.....				55							55
M. & O.				303							303
Penn.			50	245							295
Southern			35	50							85
T. St. L. & W.....				85							85
T. R. R. A.....			280								280
Wabash—East			10	10							20
Totals			580	1168							1748

Total for local delivery in East St. Louis..... 580

Total for through movement..... 1,168

Total delivered..... 2,719

Chicago, Rock Island & Pacific Railway, October, 1920.

Total carloads, inbound and outbound..... 5,400

Outbound.

For movement beyond switching district..... 2,512

For delivery within switching district..... 169

Total 2,681

Loaded at C. R. I. & P. Freight House..... 536

Loaded locally on C. R. I. & P. 0

Received from other roads: (L—Local, T—Through).

St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
C. B. & Q.—West			3	22							25
Mfgs.					1	16					17
M. K. & T.			1	2							3
M. P.—West			3	39							42
M. P.—South						6					6
St. L.-S. F.			1	42							43
T. R. R. A.	2	38	2	60	2	8					112
Wabash—West			1	6					30	7	44
Totals	2	38	11	171	3	30			30	7	292

Total for local delivery on C. R. I. & P. 46

Total for through movement on C. R. I. & P. 246

East St. Louis:

B. & O.			5	146							151
C. & A.					8						8
C. & E. I.				35							35
C. C. C. & Ct. L.				150							150
C. P. & St. L.				14							14
E. St. L. & Sub.			9	230							239
E. St. L. Jct.				32							32
I. C.				74							74
L. & M.				15							15
L. & N.				205							205
M. & O.				20							20
Penn.			21	109							130
St. L. & O'F.				275							275
St. L.-S. W.			5								5
St. L. T. & E.			15	15							30
Southern			45	295							340
T. St. L. & W.			15	55							70
T. R. R. A.				30		5					35
Wabash—East				25							25
Totals			115	1725	8	5					1853

Total for local delivery on C. R. I. & P. 123

Total for through movement on C. R. I. P. 1,730

Total received 2,681

East St. Louis & Suburban Railway, October, 1920.

Total carloads, inbound and outbound..... 2,889

Inbound.

Loaded beyond switching district..... 2,750

Loaded within switching district for other roads 74

Total 2,824

For delivery to other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
A. & S.....							17				17
B. & O.....						3	1				4
C. & A.....				30							30
C. B. & Q.—East						4					4
C. P. & St. L.....			5	1		1					7
I. C.....			3			2					5
I. T. S.			13								13
L. & N.			1								1
M. P.—Dupo			60	40							100
M. & O.					1	9					10
Penn.			30			12					42
St. L.—S. W.....			4				14				18
Southern					5	6				52	63
T. St. L. & W.....						1					1
T. R. R. A.....			325		41						366
Wabash—East				22							22
E. St. L. Jct.....			6		1						7
Totals			447	93	48	38	32			52	710

Total for local delivery in E. St. Louis..... 527

Total for through movement..... 183

St. Louis:

C. R. I. & P.....			9	230							239
Mfgs.					25						25
M. K. & T.....			15	185							200
M. P.—West			155	10							165
M. P.—South					60						60
St. L.—S. F.			270	260							530
T. R. R. A.....			555								555
Wabash—West			330	10							340
Totals			1334	695	85						2114

Total for local delivery in St. Louis..... 1,419

Total for through movement..... 695

Total delivered 2,824

No tabulation made of outbound carloads on account of small number. Outbound movement consists almost entirely of empty coal cars.

Illinois Central Railroad, October, 1920.

Total carloads, inbound and outbound..... 23,639

Inbound.

Loaded beyond switching district..... 10,759

Loaded within switching district for other roads..... 19

Total 10,778

For setting at I. C. Freight House..... 1,236

From South line to North line..... 2,532

From North line to South line..... 693

For delivery to other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
A. & S.							203				203
B. & O.	1	4			5	18					28
C. & A.						96					96
C. & E. I.				1							1
C. B. & Q.—East		21			4	267					292
C. C. C. & St. L.		5			2	20			1		28
C. P. & St. L.						41					41
E. St. L. & Sub.				1	2						3
E. St. L. Jct.	1				1				701		703
L. & M.				2							2
L. & N.		1		1	3	28					33
M. & O.						15					15
M. P.—Dupo		3		1	9	20			53	503	589
Penn.		6	1		6	34					47
St. L.—S. W.		3							1	95	99
St. L. T. & E.				10		1					11
Southern						1			26	223	250
T. St. L. & W.		2				31					33
T. R. R. A.		22	415		29						466
Wabash—East		1			1	101					103
River						10					10
Totals	2	68	416	16	62	683	203		782	821	3053

Total for local delivery in East St. Louis..... 1,465

Total for through movement..... 1,588

St. Louis:

C. B. & Q.—West					34	138					172
C. R. I. & P.				74							74
L. & N. House			20								20
Mfgs.					105						105
M. K. & T.				140							140
M. P.—West	150	65									215
M. P.—South					175	12					187
St. L.—S. F.	65	120									185
T. R. R. A.	584		423		220						1227
Wabash—West	95	4	35	10	650	145					939
Totals	894	189	478	224	1184	295					3264

Total for local delivery in St. Louis..... 2,556

Total for through movement..... 708

Total delivered 10,778

Illinois Central Railroad, October, 1920.

Total carloads, inbound and outbound..... 23,639

Outbound.

For movement beyond switching district..... 12,766
For delivery within switching district..... 95

Total 12,861

Loaded at I. C. Freight House..... 2,159
Loaded locally on I. C..... 0
From South line to North line..... 2,532
From North line to South line..... 693

Received from other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchant		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
A. & S.....							7				7
B. & O.						40					40
C. & A.	1	17			3	245					266
C. B. & Q.—East		90				422					512
C. C. C. & St. L.....									3	47	50
C. P. & St. L.....						79					79
E. St. L. & Sub.			1	4							5
E. St. L. Jct.										575	575
L. & N.									1	81	82
M. & O.					2	216		13		1	232
M. P.—Dupo						2				1174	1176
Penn.	1				1	22		10			34
St. L.—S. W.....										979	979
St. L.—T. & E.				15							15
Southern										45	45
T. St. L. & W.....					1	2		8			11
T. R. R. A.....	1	8	27	214		108					358
Wabash—East						145					145
Totals	3	115	28	233	7	1281		38	4	2902	4611

Total for local delivery on I. C..... 42

Total for through movement on I. C..... 4,569

St. Louis:

C. B. & Q.—West			15			410					425
C. R. I. & P.....				85							85
Mfgs.						62					62
M. K. & T.....				174							174
M. P.—West	30	380									410
M. P.—South					3	125					128
St. L.—S. F.....		282									282
T. R. R. A.....		275		285		275					835
Wabash—West		30	5	320		110					465
Totals	30	976	20	864	3	982					2866

Total for local delivery on I. C..... 53

Total for through movement on I. C..... 2,813

Total received 12,861

Illinois Traction System, October, 1920.

Total carloads, inbound and outbound..... 1,456

Inbound.

Loaded beyond switching district..... 379
Loaded within switching district for other roads..... 7

Total 486

For setting at I. T. S. Freight House and Team Tracks..... 172

For delivery to other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	
C. & A.				4					4
I. C.				3					3
E. St. L. Jct.			5						5
L. & M.				1					1
L. & N.				4					4
M. P.—Dupo				2					2
M. & O.				16					16
Penn.			1						1
Southern							8		8
T. R. R. A.			67						67
Totals			73	30			8		111

Total for local delivery in East St. Louis..... 81

Total for through movement..... 30

St. Louis:

C. B. & Q.—West.....			6						6
C. R. I. & P.				1					1
Mfgs					1				1
M. K. & T.				1					1
M. P.—West			17	46					63
M. P.—South					15	3			18
St. L.—S. F.			25	3					28
T. R. R. A.			64						64
Wabash—West			20	1					21
Totals			132	52	16	3			203

Total for local delivery in St. Louis..... 148

Total for through movement..... 55

Total delivered 486

Illinois Traction System, October, 1920.

Total carloads, inbound and outbound..... 1,456

Outbound.

For movement beyond switching district..... 844
For delivery within switching district..... 126

Total 970

Loaded at I. T. S. Freight House and Team Tracks 438

Received from other roads: (L.—Local, T.—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	
B. & O.				1					1
C. & A.			1	3					4
C. & E. I.			36	21					57
C., C., C. & St. L.				1					1
C. P. & St. L.				1					1
E. St. L. & Sub.			13						13
L. & N.				2					2
M. P.—Dupo			45	20					65
M. & O.			1	29					30
Penn.			2	1					3
St. L.-S. W.				2					2
St. L.-T. & E.			1	1					2
Southern			1					24	25
T. R. R. A.			1	5					6
Totals			101	87				24	212

Total for local delivery on I. T. S. 101

Total for through movement on I. T. S. 111

St. Louis:

C. B. & Q.—West.....			5	26	2	1			34
C. R. I. & P.				4					4
Mfgs.						6			6
M. P.—West				17					17
M. P.—South			8		1	39			48
St. L.-S. F.	6	6	2	113					127
T. R. R. A.			6	26	2	50			84
Totals	6	14	13	186	5	96			320

Total for local delivery on I. T. S. 24

Total for through movement on I. T. S. 296

Total received 970

Litchfield & Madison Railroad, October, 1920.

Total carloads, inbound and outbound..... 2,548

Inbound.

Loaded beyond switching district..... 2,325

Loaded within switching district for other roads..... 9

Total 2,334

For delivery to other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
A. & S.							305				305
B. & O.				5							5
C. & A.				2							2
C. B. & Q.—East			4	12							16
C. C. C. & St. L.											1
C. P. & St. L.									41		41
L. & N.				1							1
M. P.—Dupo			24	14							38
Penn.			2	4							6
Southern				7							7
T. R. R. A.			115								115
Wabash—East				2							2
Totals			145	48			305		41		539

Total for local delivery in East St. Louis..... 491

Total for through movement..... 48

St. Louis:

C. B. & Q.—West			20								20
C. R. I. & P.			15								15
M. P.—West			280	130							410
M. P.—South					190						190
St. L.—S. F.			25	5							30
T. R. R. A.			610								610
Wabash—West			500	20							520
Totals			1415	190	190						1795

Total for local delivery in St. Louis..... 1,605

Total for through movement..... 190

Total delivered 2,334

No tabulation made of outbound carloads on account of small number. Outbound movement consists almost entirely of empty coal cars.

Louisville & Nashville Railroad, October, 1920.

Total carloads, inbound and outbound..... 8,317

Inbound.

Loaded beyond switching district..... 4,598

Loaded within switching district for other roads..... 58

Total 4,656

For setting at L. & N.—East St. Louis Freight House..... 265

For local delivery on L. & N..... 8

For delivery to other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
A. & S.							24				24
B. & O.									31	8	39
C. & A.										300	300
C. & E. I.				12							12
C. B. & Q.—East									2	375	377
C. C. C. & St. L.									1	6	7
C. P. & St. L.						93					93
E. St. L. Jct.	122								252		374
I. C.									1	81	82
I. T. S.				2							2
L. & M.				1							1
M. & O.						3					3
M. P.—Dupo					270	491		1			762
Penn.						9					9
St. L.—S. W.					2	55					57
Southern	1								57	3	61
T. St. L. & W.						14					14
T. R. R. A.	11	7	81		9						108
Wabash—East		1				84					85
Totals	134	8	81	15	281	749	24	1	344	773	2410

Total for local devilery in East St. Louis..... 864

Total for through movement..... 1,546

St. Louis:

C. B. & Q.—West.....					10						10
C. R. I. & P.				205							205
L. & N.—House.....			181								181
M. K. & T.				102							102
M. P.—West	100	175									275
M. P.—South					320						320
St. L.—S. F.	35	225									260
T. R. R. A.	88		155		255						498
Wabash—West				15	12	95					122
Totals	223	400	336	322	597	95					1973

Total for local delivery in St. Louis..... 1,156

Total for through movement..... 817

Total delivered 4,656

Louisville & Nashville Railroad, October, 1920.

Total carloads, inbound and outbound..... 8,317

Outbound.

For movement beyond switching district..... 3,284

For delivery within switching district..... 377

Total 3,661

Loaded at L. & N.—East St. Louis Freight House..... 538

Loaded locally on L. & N..... 37

Received from other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
A. & S.....							1				1
B. & O.			20							17	37
C. & A.		11	5						12	154	182
C. & E. I.....			31	1							32
C. B. & Q.—East		24							5	215	244
C. C. C. & St. L.....									18	16	34
C. P. & St. L.....					1	20					21
E. St. L. & Sub.....			1								1
E. St. L. Jct.										650	650
I. C.		1	20		3	28					52
L. & M.				1							1
M. & O.					2	6		16			24
M. P.—Dupo					1	138					139
Penn.			15		3	21					39
St. L. S. W.....				1		23					24
S. L. T. & E.....				5							5
Southern			8								8
T. St. L. & W.....			27		2		2	4			35
T. R. R. A.....	2	13	7	104	6	30					162
Wabash—East		1			1	47					49
Totals	2	50	134	112	19	313	2	21	35	1052	1740

Total for local delivery on L. & N..... 192

Total for through movement on L. & N..... 1,548

St. Louis:

C. B. & Q.—West			42			20					62
C. R. I. & P.....			2	55							57
L. & N.—House.....				208							208
Mfgs.						30					30
M. K. & T.....				70							70
M. P.—West	75	185	7								267
M. P.—South					8	62					70
St. L.—S. F.....	44	58									102
T. R. R. A.....		95		96		30					221
Wabash—West			7	175		77					259
Totals	119	338	58	604	8	219					1346

Total for local delivery on L. & N..... 185

Total for through movement on L. & N..... 1,161

Total received 3,661

Manufacturers' Railway, October, 1920.

Total carloads, inbound and outbound..... 2,477

Inbound.

Received from other roads: (L—Local, T—Through).

St. Louis:

Roads.	Terminal		Merchants		Wiggins		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	
C. B. & Q.—West.....					130				130
C. R. I. & P.....			45						45
M. K. & T.....			45						45
M. P.—West			2						2
M. P.—South					3		55		58
T. R. R. A.	2		8		5				15
Wabash—West					82				82
Totals	2		100		220		55		377

Total for local delivery..... 377

East St. Louis:

C. P. & St. L.....					60				60
E. St. L. & Sub.			25						25
I. C.					105				105
M. P.—Dupo			5		90				95
M. & O.					50				50
S. L. & O'F.....			210						210
St. L.—S. W.....					90				90
St. L.—T. & E.....			60						60
Southern					120				120
T. St. L. & W.					23				23
T. R. R. A.....			10						10
Wabash—East					60				60
Totals			310		598				908

Total for local delivery..... 908

Total received..... 1,285

Manufacturers' Railway, October, 1920.

Total carloads, inbound and outbound..... 2,477

Outbound.

Loaded on Mfgs for other roads..... 1,068

Loaded on Mfgs. for industries on Mfgs..... 124

Total 1,192

Loaded on Mfgs. and delivered to industries Mfgs. 124

For delivery to other roads: (L—Local, T—Through).

St. Louis:

Roads.	Terminal		Merchants		Wiggins		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	
C. B. & Q.—West.....					2	58			60
C. R. I. & P.....					1	16			17
I. T. S.						6			6
M. K. & T.....						24			24
M. P.—West			2	1				112	115
M. P.—South						2			2
St. L.—S. F.....			2	55					57
T. R. R. A.....					41				41
Wabash—West					5	78			83
Totals			4	56	49	184		112	405

Total for local delivery in St. Louis..... 53

Total for through movement..... 352

East St. Louis:

B. & O.....					30			30
C. & A.....					15			15
C. & E. I.....					30			30
C. B. & Q.—East.....					5			5
C. C. C. & St. L.....					45			45
C. P. & St. L.....					95			95
I. C.					62			62
L. & N.....					30			30
M. P.—Dupo					74			74
M. & O.....					43			43
Penna.					50			50
St. L.—S. W.....					34			34
Southern					25			25
T. St. L. & W.....					20			20
T. R. R. A.....					45			45
Wabash—East					60			60
Totals					45	618		663

Total for local delivery in East St. Louis..... 45

Total for through movement..... 618

Total delivered 1,192

Missouri, Kansas & Texas Railway, October, 1920.

Total carloads, inbound and outbound..... 8,544

Inbound.

Loaded beyond switching district..... 3,465

Loaded within switching district for other roads..... 62

Total 3,527

For setting at M. K. & T. freight house..... 243

For local delivery on M. K. & T..... 0

For delivery to other roads: (L—Local, T—Through).

St. Louis:

Roads.	Terminal		Merchants		Wiggins		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	
C. B. & Q.—West.....			2				6	18	26
C. R. I. & P.....			1	2					3
Mfgs.					45				45
M. P.—West			32	1					33
M. P.—South					36				36
St. L.—S. F.....			3	3					6
T. R. R. A.....			213		2				215
Wabash—West			23	10					33
River				6					6
Totals			274	22	83		6	18	403

Total for local delivery in St. Louis..... 363

Total for through movement..... 40

East St. Louis:

B. & O.....			403						403
C. & A.....			75						75
C. B. & Q.—East.....			30						30
C. & E. I.....			150						150
C. C. C. & St. L.....			272						272
C. P. & St. L.....			30						30
E. St. L. Jct.....			398						398
I. C.			174						174
L. & M.....			90						90
L. & N.....			70						70
M. & O.....			10						10
Penn.			440						440
Southern			14	30					44
T. St. L. & W.....			555						555
T. R. R. A.....			80						80
Wabash—East			150						150
Totals			582	2,299					2,881

Total for local delivery in East St. Louis..... 582

Total for through movement..... 2,299

Total delivered 3,527

Missouri, Kansas & Texas Railway, October, 1920.

Total carloads, inbound and outbound..... 8,544

Outbound.

For movement beyond switching district..... 4,439

For delivery within switching district..... 578

Total 5,017

Loaded at M. K. & T. freight house..... 1,073

Loaded locally on M. K. & T..... 0

Received from other roads: (L—Local, T—Through).

St. Louis:

Roads.	Terminal		Merchants		Wiggins		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	
C. B. & O.—West.....			10	4			1	30	45
C. R. I. & P.....			2	1					3
Mfgs.						24			24
M. P.—West			11	34					45
M. P.—South						37			37
St. L.—S. F.....				23					23
T. R. R. A.....			7	177	1	12			197
Wabash—West			3	29					32
Totals			33	268	1	73	1	30	406

Total for local delivery on M. K. & T..... 35

Total for through movement on M. K. & T..... 371

East St. Louis:

B. & O.....			3	150					153
C. & A.....			4	88					92
C. & E. I.....				85					85
C. B. & O.—East.....				5					5
C. C. C. & St. L.....			180	170					350
C. P. & St. L.....				42					42
E. St. L. & Sub.....			15	185					200
E. St. L. Jct.....				22					22
I. C.				140					140
L. & N.....				102					102
M. & O.....				10					10
M. P.—Dupo				10					10
Penn.			146	393					539
St. L. T. & E.....				610					610
Southern				45					45
T. St. L. & W.....			15	208					223
T. R. R. A.....			115	145		5			265
Wabash—East			65	580					645
Totals			543	2990		5			3538

Total for local delivery on M. K. & T..... 543

Total for through movement on M. K. & T..... 2,995

Total received 5,017

Missouri Pacific Railroad (East Side), October, 1920.

Total Carloads, inbound and outbound..... 19,546

Inbound.

Loaded beyond switching district..... 12,916

Loaded within switching district for other roads..... 488

Total 13,404

For setting at Mo. Pac. freight house and team tracks, via Ivory Ferry 1,152

For local delivery on Mo. Pac., via Ivory Ferry 456

For through movement on West Side, via Ivory Ferry 701

For delivery to other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
A. & S.....							955				955
B. & O.....					3	554		1			558
C. & A.....						1007					1007
C. & E. I.....				347							347
C. B. & Q.—East.....			83			91					174
C. C. C. & St. L.....					1	626					627
C. P. & St. L.....					6	507		3			516
E. St. L. & Sub.....			5	7							12
E. St. L. Jct.....			322		2						324
I. C.....						2			1174		1176
I. T. S.....			5	20							25
L. & M.....				8							8
L. & N.....					1	138					139
M & O.....									10		10
Penn.....				41		12	5	667			725
St. L. & O'F.....			2	2							4
St. L. T. & E.....				22							22
Southern.....				1		3	43	230			277
T. St. L. & W.....				1		12	6	796			815
T. R. R. A.....			568		70						638
Wabash—East.....		1		1573		4					1578
Totals.....		1	985	2022	83	2956	1009	1697		1184	9937

Total for local delivery in East St. Louis..... 2,077

Total for through movement..... 7,860

St. Louis:

C. B. & Q.—West.....					15	448					463
I. T. S.....			40								40
Mfrs.....			5			90					95
M. K. & T.....				10							10
M. P.—West.....			44	88							132
M. P.—South.....					115						115
St. L.—S. F.....			25	35							60
T. R. R. A.....			120		10						130
Wabash—West.....			48		15	50					113
Totals.....			282	133	245	498					1158

Total for local delivery in St. Louis..... 527

Total for through movement..... 631

Total delivered 13,404

Missouri Pacific Railroad (East Side), October, 1920.

Total carloads, inbound and outbound..... 19,546

Outbound.

For movement beyond switching district..... 4,930
For delivery within switching district..... 1,212

Total 6,142

Loaded at Mo. Pac. freight house and team tracks, via Ivory Ferry..... 1,178

Loaded locally on Mo. Pac., via Ivory Ferry 120

Received from Mo. Pac. West Side for through movement, via Ivory Ferry..... 1,563

Received from other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
A. & S.....							2	8			10
B. & O.....		2			22	188					212
C. & A.....		10			13	261					284
C. & E. I.....			8	48							56
C. B. & Q.—East.....		4		2	5	117					128
C. C. C. & St. L.....	6	5			65	192					268
C. P. & St. L.....						62					62
E. St. L. & Sub.....			60	40							100
E. St. L. Jct.....				28							28
I. C.		3		1	9	20			53	503	589
L. & M.....			24	14							38
L. & N.....					270	491		1			762
M. & O.....									56		56
Penn.		8		1	29	21	128	333			520
St. L. & O'F.....			65								65
St. L. T. & E.....			60	42							102
Southern		13			31	206		6			256
T. St. L. & W.....					2		7	193			202
T. R. R. A.....	1	9	205	287	13	106					621
Wabash—East		22			77	468					566
Totals	7	76	423	463	536	2130	137	541	109	503	4925

Total for local delivery on Mo. Pac..... 1,212

Total for through movement on Mo. Pac..... 3,713

St. Louis:

C. B. & Q.—West.....					210						210
Mfgs.					74						74
T. R. R. A.....		15		80							95
Wabash—West					10						10
Totals		15		80		294					389

Total for local delivery on Mo. Pac.....

Total for through movement on Mo. Pac..... 389

8,175

Delivered to Mo. Pac. (West Side) for through movement..... 2,033

Total received 6,142

Missouri Pacific Railroad (West Side), October, 1920.

Total carloads, inbound and outbound..... 33,971

Inbound.

Loaded beyond switching district..... 10,441

Loaded within switching district for other roads..... 2,514

Total 12,955

For setting at Mo. Pac. Freight Houses and Team Tracks..... 1,198

For local delivery on Mo. Pac..... 591

For through movement on East Side—via Ivory Ferry..... 236

For delivery to other roads: (L—Local, T—Through).

St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
C. B. & Q.—West.....			44	7	313	248					612
C. R. I. & P.....			3	39		6					48
I. T. S.				17	1	39					57
L. & N.—House			7								7
Mfgs.			2		3				55		60
M. K. & T.....			11	34		37					82
St. L.-S. F.....			1	5		1			111	247	365
T. R. R. A.	181		480		884						1545
Wabash—West			1		1	1			585	442	1030
River						10					10

Totals 181 549 102 1202 342 751 689 3816

Total for local delivery in St. Louis..... 2,683

Total for through movement..... 1,133

East St. Louis:

A. & S.....	24				16						40
B. & O.....	57	380			4	120					561
C. & A.....	11	99				65					175
C. & E. I.....		128				60					188
C. B. & Q.—East					60	398					458
C. C. C. & St. L.....		665			6	44					715
C. P. & St. L.....		58				40					98
E. St. L. Jct	785										785
I. C.	30	380			3	125					538
I. T. S.		8									8
L. & M.	13	65									78
L. & N.....	75	185			8	62					330
M. & O.....	50	95				8					153
Penn.	100	632			12	60					804
St. L. & O'F.					8	8					16
St. L. S. W.....					4	40					44
St. L. T. & E.....		20				15					35
Southern	30	234			8	50					332
T. St. L. & W.....	35	615				120					770
T. R. R. A.	156				165						321
Wabash—East	5	483			4	183					675

Totals 1371 4047 298 1398 7114

Total for local delivery in East St. Louis..... 1,669

Total for through movement..... 5,445

Total delivered..... 12,955

Missouri Pacific Railroad (West Side), October, 1920.

Total carloads, inbound and outbound..... 33,971

Outbound.

For movement beyond switching district..... 13,668

For delivery within switching district..... 7,348

Total 21,016

Loaded at Mo. Pac. Freight House and Team Track..... 1,964

Loaded locally on Mo. Pac..... 196

Received from Mo. Pac.—East Side..... 2,734

Passing through district over Mo. Pac..... 4,550

Received from other roads: (L—Local, T—Through).

St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
C. B. & Q.—West.....	.....	.....	91	3	376	105	.....	.....	.....	.....	575
C. R. I. & P.....	.....	.....	55	6	49	1	.....	.....	.....	.....	111
Mfrs. ....	.....	.....	.....	.....	4	1	.....	.....	.....	117	122
M. K. & T.....	.....	.....	33	35	.....	.....	.....	.....	.....	.....	68
St. L.-S. F. ....	.....	.....	2	.....	.....	.....	.....	.....	704	177	883
T. R. R. A.	43	73	216	107	134	106	.....	.....	.....	.....	679
Wabash—West .....	.....	.....	.....	.....	1	1	.....	.....	269	168	439
Totals	43	73	397	151	564	214	.....	.....	973	462	2877

Total for local delivery on Mo. Pac..... 1,977

Total for through movement on Mo. Pac..... 900

East St. Louis:

B. & O.....	167	235	.....	6	254	.....	.....	.....	.....	.....	662
C. & A.....	105	44	.....	.....	152	.....	.....	.....	.....	.....	301
C. & E. I.....	.....	.....	49	120	.....	.....	.....	.....	.....	.....	169
C. B. & Q.—East	70	23	.....	.....	20	.....	.....	.....	.....	.....	113
C. C. C. & St. L.....	162	419	.....	.....	122	.....	.....	.....	.....	.....	703
C. P. & St. L.....	15	53	.....	.....	14	.....	.....	.....	.....	.....	82
E. St. L. & S.....	.....	.....	215	10	.....	.....	.....	.....	.....	.....	225
E. St. L. Jct. ....	.....	693	.....	.....	.....	.....	.....	.....	.....	.....	693
I. C.	150	65	.....	.....	175	12	.....	.....	.....	.....	402
L. & M. ....	.....	.....	280	130	190	.....	.....	.....	.....	.....	600
L. & N.....	175	100	.....	.....	320	.....	.....	.....	.....	.....	595
M. P.—Dupo .....	.....	.....	44	88	115	.....	.....	.....	.....	.....	247
M. & O.....	62	6	.....	.....	51	8	.....	.....	.....	.....	127
Penn.	323	337	.....	.....	284	.....	.....	.....	.....	.....	944
St. L. & O'F.....	.....	.....	245	30	.....	.....	.....	.....	.....	.....	275
St. L. S. W.....	.....	.....	55	.....	25	.....	.....	.....	.....	.....	80
St. L. T. & E.....	.....	.....	165	35	60	.....	.....	.....	.....	.....	200
Southern	150	153	5	.....	.....	.....	.....	.....	.....	.....	308
T. St. L. & W.....	12	15	40	210	95	.....	.....	.....	.....	.....	372
T. R. R. A.	425	140	35	107	65	41	.....	.....	.....	.....	813
Wabash—East	220	244	.....	.....	260	.....	.....	.....	.....	.....	724
Totals	2036	2527	1133	736	2202	61	.....	.....	.....	.....	8695

Total for local delivery on Mo. Pac..... 5,361

Total for through movement on Mo. Pac..... 3,324

Total received 21,016

Mobile & Ohio Railroad, October, 1920.

Total carloads, inbound and outbound..... 8,778

Inbound.

Loaded beyond switching district..... 4,708

Loaded within switching district for other roads..... 9

Total 4,717

For setting at M. & O. Freight House..... 388

For local delivery on M. & O..... 0

For delivery to other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
A. & S.....							5				5
B. & O.					1	71		16			88
C. & A.		1				344					345
C. & E. I.....		22		51							73
C. B. & Q.—East		2		2	1	264					269
C. C. C. & St. L.....					2	116					118
C. P. & St. L.....						204		6			210
E. St. L. & Sub.....		1									1
E. St. L. Jct.									547		547
I. T. S.	1	3		25	1						30
I. C.					2	216		13		1	232
L. & M.				3				13			16
L. & N.....					2	6		16			24
M. P.—Dupo						1			56		57
Penn.				1		270	13	66			350
St. L. S. W.....						10	20				30
St. L. & O'F.								1			1
St. L. T. & E.....		3		1			2				6
Southern								1		202	203
T. St. L. & W.....					1	161		1			163
T. R. R. A.	82		336		6						424
Wabash—East				1	1	221					223
Totals	83	32	336	84	17	1884	40	133	603	203	3415

Total for local delivery in East St. Louis..... 1,079

Total for through movement..... 2,336

St. Louis:

C. B. & Q.—West.....						240					240
C. R. I. & P.....				20							20
Mfgs.					50						50
M. K. & T.....				10							10
M. P.—West	62	6									68
M. P.—South					51	8					59
St. L.—S. F.....		40									40
T. R. R. A.....	100		90		20						210
Wabash—West			28	44	65	80					317
Totals	162	46	118	74	186	328					914

Total for local delivery in St. Louis..... 466

Total for through movement..... 448

Total delivered 4,717

Mobile & Ohio Railroad, October, 1920.

Total carloads, inbound and outbound..... 8,778

Outbound.

For movement beyond switching district..... 3,977

For delivery within switching district..... 84

Total 4,061

Loaded at M. & O. Freight House..... 738

Loaded locally on M. & O..... 0

Received from other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
B. & O.....					1	29					30
C. & A.....						196					196
C. & E. I.....				4							4
C. B. & Q.—East		28			1	200					229
C. C. C. & St. L.....					1	29					30
C. P. & St. L.....						44					44
E. St. L. & Sub.....					1	9					10
E. St. L. Jct.....									325		325
I. C.						15					15
L. & N.....						3					3
M. P.—Dupo									10		10
Penn.....		1				82					83
St. L.-T. & E.....				9							9
Southern									795		795
T. St. L. & W.....						1		2			3
T. R. R. A.....		7	4	51	1	36					99
Wabash—East		2			4	77					83
Totals		38	4	64	9	721		2		1130	1968

Total for local delivery on M. & O..... 13

Total for through movement on M. & O..... 1,955

St. Louis:

C. B. & Q.—West.....			16			173					189
C. R. I. & P.....				303							303
Mfgs.						43					43
M. K. & T.....				10							10
M. P.—West	50	95									145
M. P.—South						8					8
St. L.-S. F.....		62									62
T. R. R. A.....		95		85		55					235
Wabash—West		10	5	240		105					360
Totals	50	262	21	638		384					1355

Total for local delivery on M. & O..... 71

Total for through movement on M. & O..... 1,284

Total received 4,061

Pennsylvania Railroad, October, 1920.

Total carloads, inbound and outbound..... 13,753

Inbound.

Loaded beyond switching district..... 5,984

Loaded within switching district for other roads..... 869

Total 6,853

For setting at Penn. E. St. Louis Freight House..... 1,153

For local delivery on Penn..... 20

For delivery to other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
A. & S.....											
B. & O.....					17	3					20
C. & A.....					1	85					86
C. B. & Q.—East.....						11					11
C. C. C. & St. L.....		1				1					2
C. & E. I.....				4							4
C. P. & St. L.....		1				30					31
E. St. L. Sub.....			2								2
E. St. L. Jct.....									103		103
I. C.....					1	22		10			33
I. T. S.....			1	2							3
L. & M.....				1							1
L. & N.....					1	22					23
M. & O.....								81			81
M. P.—Dupo.....		8			29	20	128	333			518
St. L. & O'F.....			2								2
St. L. S. W.....							1	386			387
Southern.....									26	45	71
T. R. R. A.....	24		146		122						292
Wabash—East.....						19					19
Totals.....	24	10	151	7	171	213	129	810	129	45	1689

Total for local delivery in East St. Louis..... 604

Total for through movement..... 1,085

St. Louis:

C. B. & Q.—West.....			14		15	55					84
C. R. I. & P.....			21	109							130
L. & N.—Hse.....			15								15
M. K. & T.....			146	393							539
Mo. P.....	323	337			284						944
Penn.—Hse.....			436								436
St. L.—S. F.....	180	411									591
St. L. S. W.—Hse.....					15						15
T. R. R. A.....	338		320		253						911
Wabash—West.....	77		23		31	195					326
Totals.....	918	748	975	502	598	250					3991

Total for local delivery in St. Louis..... 2,491

Total for through movement..... 1,500

Total delivered 6,853

Pennsylvania Railroad, October, 1920.

Total carloads, inbound and outbound..... 13,753

Outbound.

For movement beyond switching district..... 6,128

For delivery within switching district..... 772

Total 6,900

Loaded at Penn. E. St. Louis Freight House..... 487

Loaded locally on Penn. 7

Received from other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
A. & S.							5				5
B. & O.						1					1
C. & A.					105	79					184
C. B. & Q.—East		7			6	90					103
C. C. C. & St. L.	2				4	3					9
C. P. & St. L.						17					17
E. St. L. & Sub.			30			12					42
E. St. L. Jct.										636	636
I. C.		6	1		6	34					47
L. & M.			2	4							6
L. & N.						9					9
M. & O.				1		270	13	66			350
M. P.—Dupo				41		12	5	667			725
St. L. S. W.				4		4	17	324			349
Southern									127	34	161
T. R. R. A.		2	91	180	5	162					440
T. St. L. & W.						1					1
Totals	2	15	124	230	126	694	35	1062	127	670	3085

Total for local delivery on Penn..... 414

Total for through delivery on Penn..... 2,671

St. Louis:

C. B. & Q.—West					30	45					75
C. R. I. & P.			50	245							295
Mfgs.						50					50
M. K. & T.				440							440
Mo. Pac.	100	632			12	60					804
Penn.—Hse.				206							206
St. L.—S. F.	82	470									552
T. R. R. A.		120	59	275		75					529
Wabash—West		35		225	25	85					370
Totals	182	1257	109	1391	67	315					3321

Total for local delivery on Penn..... 358

Total for through delivery on Penn..... 2,963

Total received..... 6,900

St. Louis & O'Fallon Railroad, October, 1920.

Total carloads, inbound and outbound..... 2,017

Inbound.

Loaded beyond switching district..... 1,946

Loaded within switching district for other roads..... 0

Total 1,946

For delivery to other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
A. & S.							340				340
M. P.—Dupo			65	2							67
Southern									66		66
T. R. R. A.			21								21
Totals			86	2			340		66		494

Total for local delivery in East St. Louis..... 492

Total for through movement..... 2

St. Louis:

C. R. I. & P.			275								275
Mfgs.					210						210
M. P.—West			175	30							205
M. P.—South					70						70
St. L.—S. F.			95								95
T. R. R. A.			287								287
Wabash—West			225	85							310
Totals			782	390	280						1452

Total for local delivery in St. Louis..... 1,062

Total for through movement..... 390

Total delivered 1,946

No tabulation made of outbound carloads on account of small number. Outbound movement consists almost entirely of empty coal cars.

St. Louis-San Francisco Railway, October, 1920.

Total carloads, inbound and outbound..... 17,374

Inbound.

Loaded beyond switching district..... 8,841

Loaded within switching district for other roads..... 295

Total inbound 9,136

For setting at St. L.-S. F. Freight House..... 474

For local delivery on St. L.-S. F. 65

For delivery to other roads: (L—Local, T—Through).

St. Louis:

Roads.	Terminal		Merchants		Wiggins		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	
C. B. & Q.—West.....			112	358					470
C. R. I. & P.....			1	42					43
I. T. S.			2	113					115
M. K. & T.....				23					23
M. P.—West			2				300		302
M. P.—South							404	177	581
T. R. R. A.....	102		637						739
Wabash—West			41	15			197	109	362
Totals	102		795	551			901	286	2635

Total for local delivery in St. Louis..... 1,798

Total for through movement..... 837

East St. Louis:

A. & S.....			89						89
B. & O.		170							170
C. & A.....	53	351							404
C. B. & Q.—East.....		9							9
C. & E. I.....							1276		1276
C. C. C. & St. L.....	4	457							461
C. P. & St. L.....		171							171
E. St. L. Jct.....	906								906
I. C.		282							282
I. T. S.			6	6					12
L. & N.	44	58							102
M. & O.....		62							62
Penn.	82	470							552
St. L. & O'F.	3								3
St. L. S. W.....		8							8
St. L.T. & W.....		19							19
Southern	32	102							134
T. St. L. & W.....		602							602
T. R. R. A.....	121		331						452
Wabash—East	12	236							248
Totals	1257	2997	426	6			1276	5962	

Total for local delivery in East St. Louis..... 1,683

Total for through movement..... 4,279

Total delivered..... 9,136

St. Louis-San Francisco Railway, October, 1920.

Total carloads, inbound and outbound..... 17,374

Outbound.

For movement beyond switching district..... 6,114
For delivery within switching district..... 2,124

Total 8,238

Loaded at St. L.-S. F. Freight House..... 1,282

Loaded locally on St. L.-S. F..... 196

Received from other roads: (L—Local, T—Through).

St. Louis:

Roads.	Terminal		Merchants		Wiggins		Direct		Total
	L.	T.	L.	T.	L.	f.	L.	T.	
C. B. & Q.—West			44	194					238
C. R. I. & P.....			37	19					56
Mfgs.					2	55			57
M. K. & T.....			3	3					6
M. P.—West			1	5			52	61	119
M. P.—South						1	59	186	246
T. R. R. A.....	13	153	17	80	29	12			304
Wabash—West			21	39			89	203	352
Totals	13	153	123	340	31	68	200	450	1378

Total for local delivery on St. L.-S. F..... 367

Total for through movement on St. L.-S. F..... 1,011

East St. Louis:

B. & O.....	47	255	20	3		5			330
C. & A.....	69	80							149
C. B. & Q.—East.....	5	35							40
C. & E. I.....							276	665	941
C. C. C. & St. L.....	110	180							290
C. P. & St. L.....	81	61		1					143
E. St. L. & Sub.....			270	260					530
E. St. L. Jct.....		94							94
I. C.....	65	120							185
L. & M.....			25	5					30
L. & N.....	35	225							260
M. P.—Dupo			25	35					60
M. & O.....		40							40
Penn.	180	411							591
St. L. & O'F.....			95						95
St. L.-T. & E.....			258	146					404
Southern	56	424							480
T. St. L. & W.....	10	5		215					230
T. R. R. A.....		75	20	135		5			235
Wabash—East	110	145							255
Totals	768	2150	713	800		10	276	665	5382

Total for local delivery on St. L.-S. F..... 1,757

Total for through movement on St. L.-S. F..... 3,625

Total received 8,238

St. Louis Southwestern Railway, October, 1920.

Total carloads, inbound and outbound..... 8,164

Inbound.

Loaded beyond switching district..... 4,538

Loaded within switching district for other roads..... 0

Total 4,538

For setting at St. L. S. W. Freight House..... 120

For local delivery on St. L. S. W. 0

For delivery to other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
A. & S.							283				283
B. & O.			1	168		31		32			232
C. & A.						172					172
C. & E. I.		1		318							319
C. B. & Q.—Fast				2		77					79
C. C. C. & St. L.						261					261
C. P. & St. L.				1	1	169					171
E. St. L. Sub.	1										1
E. St. L. Jct.	1		55								56
I. C.										979	979
I. T. S.				2							2
L. & M.				1							1
L. & N.				1		23					24
Penn.				4		4	17	324			349
Southern				1		3		61			65
T. St. L. & W.				1		2		325			328
T. R. R. A.	8		128		237						373
Wabash—East				261		5					266
Totals	10	1	184	760	238	747	300	742		979	3961

Total for local delivery in E. St. Louis..... 732

Total for through movement..... 3,229

St. Louis:

C. B. & Q.—West.....	16			120							136
C. R. I. & P.	5										5
Mfgs.					90						90
M. P.—West			55								55
M. P.—South					25						25
T. R. R. A.			85								85
Wabash—West			25			36					61
Totals			186		115	156					457

Total for local delivery in St. Louis..... 301

Total for through movement..... 156

Total received 4,538

St. Louis Southwestern Railway, October, 1920.

Total carloads, inbound and outbound..... 8,164

Outbound.

For movement beyond switching district..... 3,500

For delivery within switching district..... 126

Total 3,626

Loaded at St. L. S. W. Freight House..... 818

Loaded locally on St. L. S. W. 0

Received from other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
B. & O.....				1	1	130	2	2			136
C. & A.....		6				248					254
C. & E. I.....				39							39
C. B. & Q.—East		2			1	108					111
C. C. C. & St. L.....						141					144
C. P. & St. L.....						2					2
E. St. L. & Sub.			4				14				18
E. St. L. Jct.				34							34
I. C.		3							1	95	99
L. & N.....					2	55					57
Penn.		1					1	386			388
M. & O.....						10	20				30
S. L.-T. & E.....				3							3
Southern				1		61		11			73
T. St. L. & W.				1				365			366
T. R. R. A.	1	32		85		9					127
Wabash—East		12			12	293					317

Totals 1 59 4 164 16 1057 37 764 1 95 2198

Total for local delivery on St. L. S. W..... 59

Total for through movement on St. L. S. W..... 2,139

St. Louis:

C. B. & Q.—West.....			5	24		43					72
Mfgs.						34					34
M. P.—South					4	40					44
St. L.-S. F.		8									8
T. R. R. A.		145		186	15	29					375
Wabash—West		12	3	22	40						77
Totals		165	8	232	59	146					610

Total for local delivery on St. L. S. W..... 67

Total for through movement on St. L. S. W..... 543

Total received 3,626

St. Louis, Troy & Eastern Railroad, October, 1920.

Total carloads, inbound and outbound..... 3,363

Inbound.

Loaded beyond switching district..... 3,201

Loaded within switching district for other roads..... 0

Total 3,201

For delivery to other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
A. & S.							3				3
B. & O.				15							15
C. & A.				92							92
C. B. & Q.—East				11							11
C. & E. I.				4							4
C. C. C. & St. L.				3							3
E. St. L. J'ct.									381		381
I. C.				16							16
I. T. S.			1	1							2
L. & N.				5							5
M. P.—Dupo			60	42							102
M. & O.				9							9
St. L. S. W.				3							3
Southern									51		51
T. R. R. A.			299								299
Wabash—East				2							2
Totals			360	203			3		431		997

Total for local delivery in East St. Louis..... 794

Total for through movement..... 203

St. Louis:

C. B. & Q.—West.....			125								125
C. R. I. & P.			15	15							30
Manufacturers					60						60
M. K. & T.				610							610
M. P.—West.....			165	35							200
M. P.—South.....					60						60
St. L.—S. F.			258	146							404
T. R. R. A.			430								430
Wabash—West			225	60							285
Totals			1093	991	120						2204

Total for local delivery in St. Louis..... 1,213

Total for through movement..... 991

Total delivered 3,201

No tabulation made of outbound carloads on account of small number. Outbound movement consists almost entirely of empty coal cars.

Southern Railway, October, 1920.

Total carloads, inbound and outbound..... 12,516

Inbound.

Loaded beyond switching district..... 6,766

Loaded within switching district for other roads..... 973

Total 7,739

For setting at Southern freight house and team tracks 443

For local delivery on Southern..... 489

For delivery to other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
A. & S.....							305				305
B. & O.....									7	17	24
C. & A.....		1							1	822	824
C. B. & Q.—East.....					4	15			10	820	849
C. & E. I.....				27							27
C. C. C. & St. L.....											
C. P. & St. L.....						1			1	230	232
E. St. L. & Sub.....	2										2
E. St. L. Jct.....					9				94		103
I. C.....										45	45
I. T. S.....			1							24	25
L. & M.....				3							3
M. P.—Dupo.....		13			31	206	6	37			293
M. & O.....										795	795
Pennsylvania.....			1						127	34	162
St. L. & O'F.....											
St. L.—S. W.....						61		11			72
St. L.—T. & E.....										9	9
T. R. R. A.....	13		288		46						347
Wabash—East.....									55	427	482
Totals.....	15	14	290	30	90	283	311	48	295	3223	4599

Total for local delivery in East St. Louis..... 1,001

Total for through movement..... 3,598

St. Louis:

C. B. & Q.—West.....					65	28					93
C. R. I. & P.....			45	295							340
Manufacturers.....					120						120
M. K. & T.....				45							45
M. P.—West.....	150	153									303
M. P.—South.....			5								5
St. L.—S. F.....	56	424									480
T. R. R. A.....	164		190		80						434
Wabash—West.....	40				120	220					380
L. & N. House.....			8								8
Totals.....	410	577	248	340	385	248					2208

Total for local delivery in St. Louis..... 1,043

Total for through movement..... 1,165

Total delivered 7,739

Southern Railway, October, 1920.

Total carloads, inbound and outbound..... 12,516

Outbound.

For movement beyond switching district..... 3,569

For delivery within switching district..... 1,208

Total 4,777

Loaded at Southern Freight House..... 465

Loaded locally on Southern 430

Interchange between other roads via the Southern..... 25

Received from other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
A. & S.....	.....	.....	.....	.....	.....	.....	14	129	.....	.....	143
B. & O.....	.....	.....	.....	.....	.....	.....	.....	.....	9	12	21
C. & A.	6	2	.....	.....	.....	.....	.....	.....	67	209	284
C. B. & Q.—East.....	1	15	.....	1	.....	7	.....	.....	30	267	320
C. & E. I.....	.....	.....	12	.....	.....	.....	.....	.....	.....	.....	13
C. C. C. & St. L.....	.....	.....	.....	.....	.....	.....	.....	.....	19	9	28
C. P. & St. L.....	.....	.....	.....	.....	.....	.....	.....	.....	133	50	183
E. St. L. & Sub.....	.....	.....	.....	.....	5	6	.....	.....	114	.....	125
E. St. L. Jct. ....	.....	.....	.....	.....	.....	.....	.....	.....	.....	235	235
I. C. ....	.....	.....	.....	.....	.....	.....	.....	.....	223	26	249
I. T. S. ....	.....	.....	.....	.....	.....	.....	.....	.....	8	.....	8
L. & M. ....	.....	.....	.....	7	.....	.....	.....	.....	.....	.....	7
L. & N.	1	.....	.....	.....	.....	.....	.....	.....	57	3	61
M. P.—Dupo .....	.....	.....	.....	1	.....	3	43	230	.....	.....	277
M. & O.....	.....	.....	.....	.....	.....	.....	.....	1	.....	202	203
Penn. ....	.....	.....	.....	.....	.....	1	.....	.....	26	45	72
St. L. & O'F. ....	.....	.....	.....	.....	.....	.....	.....	.....	66	.....	66
St. L. S. W.....	.....	.....	.....	1	.....	3	.....	61	.....	.....	65
St. L. T. & E.....	.....	.....	.....	.....	.....	.....	.....	.....	51	.....	51
T. St. L. & W.....	.....	.....	.....	.....	.....	.....	.....	.....	27	.....	27
T. R. R. A.	5	1	15	49	18	18	.....	.....	.....	.....	106
Wabash—East .....	.....	.....	.....	.....	.....	.....	.....	.....	.....	53	53
Totals	13	18	27	59	23	38	57	421	830	1111	2597

Total for local delivery on Southern..... 950

Total for through movement on Southern..... 1,647

St. Louis:

C. B. & Q.—West.....	.....	.....	19	5	10	95	.....	.....	.....	.....	129
C. R. I. & P.....	.....	.....	35	50	.....	.....	.....	.....	.....	.....	85
Mfrs. ....	.....	.....	.....	.....	.....	25	.....	.....	.....	.....	25
M. K. & T.....	.....	.....	14	30	.....	.....	.....	.....	.....	.....	44
M. P.—West	30	224	.....	.....	.....	.....	.....	.....	.....	.....	254
M. P.—South .....	.....	.....	2	2	8	50	.....	.....	.....	.....	62
St. L.—S. F.....	32	102	.....	.....	.....	.....	.....	.....	.....	.....	134
T. R. R. A. ....	.....	100	13	55	25	45	.....	.....	.....	.....	238
Wabash—West .....	.....	4	.....	150	45	90	.....	.....	.....	.....	289
Totals	62	430	83	292	88	305	.....	.....	.....	.....	1260

Total for local delivery on Southern..... 233

Total for through movement on Southern..... 1,027

Total received 4,777

Toledo, St. Louis & Western Railway, October, 1920.

Total carloads, inbound and outbound..... 7,574

Inbound.

Loaded beyond switching district..... 2,894

Loaded within switching district for other roads..... 9

Total 2,903

For setting at T. St. L. & W. Freight House..... 400

For local delivery on T. St. L. & W..... 0

For delivery to other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
A. & S.....							63				63
B. & O.....						1	2	1			4
C. & A.....		1								92	93
C. B. & Q.—East.....			2		1	16				1	20
C. C. C. & St. L.....						1					1
C. P. & St. L.....										4	4
E. St. L. & Sub.....			3								3
E. St. L. Jct.....									48		48
I. C.					1	2		8			11
L. & N.			1		2		2	4			9
M. P.—Dupo					2		7	193			202
M. & O.....						1		2			3
Penn.						1					1
St. L.—S. W.....								365			366
Southern									27		27
T. R. R. A.....	1		66		61						128
Totals	1	1	72	1	67	22	74	573	75	97	983

Total for local delivery in East St. Louis..... 289

Total for through movement..... 694

St. Louis:

C. R. I. & P.....			15	55							70
Mfrs.					23						23
M. K. & T.....			15	208							223
L. & N.—Hse.....			26								26
M. P.—West.....	12	15	40	210							277
M. P.—South.....					95						95
St. L.—S. F.....	10	5		215							230
T. R. R. A.....	180		186		85						451
Wabash—West	65		45	15							125
Totals	267	20	327	703	203						1,520

Total for local delivery in St. Louis..... 797

Total for through movement..... 723

Total delivered 2,903

Toledo, St. Louis & Western Railway, October, 1920.

Total carloads, inbound and outbound..... 7,574

Outbound.

For movement beyond switching district..... 4,623

For delivery within switching district..... 48

Total 4,671

Loaded at T. St. L. & W. freight house..... 134

Loaded locally on T. St. L. & W..... 10

Received from other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
A. & S.....	215	.....	.....	.....	215
C. & A.....	2	40	42
C. B. & Q.—East.....	1	.....	.....	.....	67	.....	.....	.....	.....	68
C. C. C. & St. L.....	1	.....	.....	.....	.....	1
C. P. & St. L.....	7	.....	7
E. St. L. & Sub.....	1	.....	.....	.....	.....	1
E. St. L. Jct.....	284	.....	284
I. C.	2	.....	.....	.....	31	.....	.....	.....	.....	33
L. & N.....	14	.....	.....	.....	.....	14
M. P.—Dupo	1	.....	12	6	796	.....	.....	815
M. & O.....	1	161	.....	1	.....	.....	163
Penn.	1	.....	.....	.....	1	.....	.....	.....	.....	2
St. L.—S. W.....	1	.....	2	.....	325	.....	.....	328
T. R. R. A.....	12	4	86	.....	74	.....	.....	.....	.....	176
Wabash—East	2	.....	.....	.....	.....	2
Totals	16	4	88	1	366	6	1337	2	331	2151

Total for local delivery on T. St. L. & W..... 13

Total for through movement on T. St. L. & W..... 2,138

St. Louis:

C. R. I. & P.....	.....	.....	.....	85	.....	.....	.....	.....	.....	.....	85
Mfrs. ....	.....	.....	.....	.....	.....	20	.....	.....	.....	.....	20
M. K. & T.....	.....	.....	.....	555	.....	.....	.....	.....	.....	.....	555
M. P.—West	35	615	.....	.....	.....	.....	.....	.....	.....	.....	650
M. P.—South .....	.....	.....	.....	.....	.....	120	.....	.....	.....	.....	120
St. L.—S. F.....	.....	602	.....	.....	.....	.....	.....	.....	.....	.....	602
T. R. R. A.....	.....	95	.....	138	.....	60	.....	.....	.....	.....	293
Wabash—West .....	.....	10	.....	41	.....	.....	.....	.....	.....	.....	51
Totals	35	1322	.....	819	.....	200	.....	.....	.....	.....	2376

Total for local delivery on T. St. L. & W..... 35

Total for through movement on T. St. L. & W..... 2,341

Total received 4,671

Wabash Railway (East), October, 1920.

Total carloads, inbound and outbound..... 12,460

Inbound.

Loaded beyond switching district..... 6,648

Loaded within switching district for other roads..... 18

Total 6,666

For setting at Wabash freight house..... 454

For local delivery on Wabash..... 0

For delivery to other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		A. & S.		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	L.	T.	
A. & S.....			1								1
B. & O.....					3	9					12
C. & A.....						1					1
C. B. & Q.—East.....						5					5
C. C. C. & St. L.....			1			12					13
C. P. & St. L.....					2	6					8
E. St. L. & Sub.....			4		2						6
E. St. L. Jct.....									190		190
I. C.						145					145
L. & N.....		1			1	47					49
M. P.—Dupo		22	1		86	466					575
M. & O.....		2			4	77					83
Penn.					7	1					8
St. L.—S. W.....		12			12	293					317
St. L. T. & E.....				1							1
St. L. & O'F.....			2								2
Southern										53	53
T. St. L. & W.....						2					2
T. R. R. A.....	26		204		19						249
Totals	26	37	213	1	136	1064			190	53	1720

Total for local delivery in East St. Louis..... 565

Total for through movement..... 1,155

St. Louis:

C. B. & Q.—West.....					60						60
C. R. I. & P.....				25							25
Mfrs.					60						60
M. K. & T.....			65	580							645
M. P.—West	185	244									429
M. P.—South					260						260
St. L.—S. F.....	105	145									250
St. L.—S. W.—House.....					30						30
T. R. R. A.....	429		320		90						839
Wabash—West	300				29				815	750	1 894
Totals	1019	389	385	605	529				815	750	4492

Total for local delivery in St. Louis..... 2,748

Total for through movement..... 1,744

Total delivered 6,666

Wabash Railway (East), October, 1920.

Total carloads, inbound and outbound..... 12,460

Outbound.

For movement beyond switching district..... 5,696

For delivery within switching district..... 98

Total 5,794

Loaded at Wabash freight house..... 329

Loaded locally on Wabash..... 0

Received from other roads: (L—Local, T—Through).

East St. Louis:

Roads.	Terminal		Merchants		Wiggins		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	
B. & O.....		2		324					326
C. & A.....							1	9	10
C. B. & Q.—East.....						5			5
C. C. C. & St. L.....		1				2			3
E. St. L. & Sub.....				22					22
E. St. L. Jct.....								128	128
I. C.		1			1	101			103
L. & M.....				2					2
L. & N.....		1				84			85
M. P.—Dupo				1573		4			1577
M. & O.....					1	221			222
Penn.						19			19
St. L. S. W.....				261		5			266
St. L. T. & E.....				2					2
Southern							55	427	482
T. R. R. A.....		5	13	251		34			303
Totals		10	13	2435	2	475	56	564	3555

Total for local delivery on Wabash..... 71

Total for through movement on Wabash..... 3,484

St. Louis:

C. R. I. & P.....			10	10					20
Mfrs.						60			60
M. K. & T.....				150					150
M. P.—West	5	483							488
St. L.—S. F.....	12	236							248
T. R. R. A.....		140		377		85			602
Wabash—West		195		147					342
Totals	17	1054	10	684		145			1910

Total for local delivery on Wabash..... 27

Total for through movement on Wabash..... 1,883

Total received 5,794

Wabash Railway (West), October, 1920.

Total carloads, inbound and outbound..... 17,760

Inbound.

Loaded beyond switching district..... 6,925

Loaded within switching district for other roads..... 552

Total 7,477

For setting at Wabash freight house and teamtracks 1,649

For local delivery on Wabash..... 522

For delivery to other roads: (L—Local, T—Through).

St. Louis:

Roads.	Terminal		Merchants		Wiggins		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	
C. B. & O.—West.....			2	6			103	6	117
C. R. I. & P.....			1	9			30	7	47
L. & N.—Hse.....			2						2
Mfrs.					82				82
M. K. & T.....			3	29					32
M. P.—South					1	1	269	168	439
St. L.—S. F.....			21	39			89	203	352
T. R. R. A.....	90		431		128				649
River						3			3
Totals	90		460	83	211	4	491	384	1723

Total for local delivery in St. Louis..... 1,252

Total for through movement..... 471

East St. Louis:

B. & O.....		5	5	105		55			170
C. & A.....	3	4				50			57
C. & E. I.....		12		30					42
C. C. C. & St. L.....		25		180		90			295
C. P. & St. L.....				25					25
E. St. L. Jct.....			593			110			703
I. C.		30	5	320					355
L. & N.....			5	175		77			257
M. & O.....		10	5	240		105			360
M. P.—Dupo						10			10
Penn.		35		225	25	85			370
St. L. S. W.....		12	3	22					37
Southern		4		150	45	90			289
T. St. L. & W.....		10		41					51
T. R. R. A.....			125		95				220
Wabash—East		195		147					342
Totals	3	342	741	1660	165	672			3583

Total for local delivery in East St. Louis..... 909

Total for through movement..... 2,674

Total delivered..... 7,477

Wabash Railway (West), October, 1920.

Total carloads, inbound and outbound..... 17,760

Outbound.

For movement beyond switching district..... 5,008

For delivery within switching district..... 5,275

Total 10,283

Loaded at Wabash freight house and team tracks..... 1,213

Loaded locally on Wabash..... 611

Received from other roads: (L—Local, T—Through).

St. Louis:

Roads.	Terminal		Merchants		Wiggins		Direct		Total
	L.	T.	L.	T.	L.	T.	L.	T.	
C. B. & Q.—West.....			101	2			74	20	197
C. R. I. & P.....			17	2			151		170
Mfrs.					5	78			83
M. K. & T.....			21	10					31
M. P.—West			1				290	221	512
M. P.—South						1	295	221	517
St. L.—S. F.....			41	15			197	109	362
T. R. R. A.....	10	92	49	45	66	48			310
Totals	10	92	230	74	71	127	1007	571	2182

Total for local delivery on Wabash..... 1,318

Total for through movement on Wabash..... 864

East St. Louis:

B. & O.....	20		4	180		5			209
C. & A.....					8	8			16
C. & E. I.....			5						5
C. B. & Q.—East.....	23	5		10					38
C. C. C. & St. L.....					126	15			141
C. P. & St. L.....		3			3				6
E. St. L. & Sub.....			330	10					340
E. St. L. Jct.....				68					68
I. C.	95	4	35	10	650	145			939
L. & M.....			500	20					520
L. & N.....				15	12	95			122
M. & O.....			28	44	65	80			217
M. P.—Dupo			48		15	50			113
Penn.	77		23		31	195			326
St. L. & O'F.....			225	85					310
St. L. S. W.....			25			36			61
St. L. T. & E.....			225	60					285
Southern	40				120	220			380
T. St. L. & W.....	65		45	15					125
T. R. R. A.....			25	189	20	3			237
Wabash—East	229		815	750	25				1819
Totals	549	12	2333	1456	1075	852			6277

Total for local delivery on Wabash..... 3,957

Total for through movement on Wabash..... 2,320

Total received 10,283

APPENDIX "F"—TIME STUDIES

Statement Showing Results of Time Study of Movement of Loaded Freight Cars Handled by Terminal Railroad Association in Connection With Other Lines, October, 1920.

- A. From arrival at Inbound Yards of Trunk lines, through Terminal to departure from Outbound Yards of connecting Trunk lines.
- B. From arrival at Inbound Yards of Trunk lines through Terminal to setting at industries on Terminal or connecting lines, vice versa outbound.

Ten cars were selected at random on 357 separate movements.

It was impossible to complete study on 10.9 per cent on account of:

- (a) Incomplete records.
- (b) Cars held for reconsignment.
- (c) Contents transferred to other cars.
- (d) Cars sent to repair tracks.
- (e) Tracers could not find dates.

Records were completed on 3160 cars, 89.1 per cent.

In the following pages * indicates average delivery less than one day, practically delivered some day as received.

— indicates no movement.

Arriving on Baltimore & Ohio Railroad.

Average number of days on.....	Arriving	Departing	Total	
Handled via Eads for through	Road	T. R. R. A.	Road	Time
movement on Mo. Pac.	*	1.0	2.0	3.4
St. L.- S. F.	*	1.0	1.0	2.6
Handled via Merchants for				
through movement on..... M. K. & T.	*	1.1	1.2	2.7
C. R. I. & P.	*	1.1	1.0	2.7
Wabash—West	*	1.0	1.2	3.0
Handled via Wiggins for				
through movement on.....	Movement via Wiggins light and infrequent.			
	No study made of this movement.			
Handled via Eads for delivery				
at local industries on..... T. R. R. A.—St. L.	1.5	2.5	*	4.0
Mo. Pac.	1.1	1.0	2.0	4.1
St. L.-S. F.	*	1.0	2.2	3.6
Wabash—West	*	*	3.0	4.2
Handled via Merchants for de-				
livery at local industries on..... T. R. R. A.—St. L.	*	1.7	—	2.2
C. B. & Q.—West.....	*	1.6	4.9	7.0
Handled via Wiggins for de-				
livery at local industries on..... T. R. R. A.—St. L.	1.6	*	—	2.3
Mo. Pac.	*	1.3	2.4	4.5
Mfrs.	*	1.2	1.8	3.6
Total number of cars traced.....	140			
Number of cars discarded.....	14			
Number of cars completed.....	126 equals 90 per cent.			

Arriving on Chicago & Alton Railroad.

Average number of days on.....	Arriving Road	T. R. R. A.	Departing Road	Total Time
Handled via Eads for through movement on	Mo. Pac.	*	1.0	2.8
	St. L.-S. F.	1.0	*	2.0
Handled via Merchants for through movement on.....	M. K. & T.	1.0	1.1	3.1
Handled via Wiggins for through movement on.....	Mo. Pac.—Dupo	*	*	1.2
	I. C.	2.3	1.0	*
	M. & O.	1.1	1.5	*
	S. L. S. W.	*	*	*
	Penn.	*	*	1.6
Handled via Eads for delivery at local industries on.....	T. R. R. A.	2.4	1.4	—
	Mo. Pac.	1.1	1.2	2.7
	St. L.-S. F.	1.4	1.4	2.7
Handled via Merchants for de- livery at local industries on.....	T. R. R. A.	*	1.9	*
Handled via Wiggins for de- livery at local industries on.....	T. R. R. A.	1.0	1.0	*
	Mo. Pac.	*	1.5	1.6
Total number of cars traced.....				140
Number of cars discarded.....				15
Number of cars completed.....				125 equals 89 per cent

Arriving on Chicago & Eastern Illinois Railroad.

Average number of days on.....	Arriving Road	T. R. R. A.	Departing Road	Total Time
Handled via Eads for through movement on	Movement via Eads light and infrequent. No study made of this movement.			
Handled via Merchants for through movement on.....	St. L.-S. F.	*	*	1.5
	C. B. & Q.—West....	*	*	2.0
	M. K. & T.	*	*	1.0
	Mo. Pac.	*	1.0	1.6
Handled via Wiggins for through movement on.....	Movement via Wiggins light and infrequent. No study made of this movement.			
Handled via Eads for delivery at local industries on.....	Movement via Eads light and infrequent. No study made of this movement.			
Handled via Merchants for de- livery at local industries on.....	T. R. R. A.—St. L.	1.0	1.4	—
Handled via Wiggins for de- livery at local industries on.....	Movement via Wiggins light and infrequent. No study made of this movement.			
Total number of cars traced.....				63
Number of cars discarded.....				13
Number of cars completed.....				50 equals 80 per cent.

Arriving on Chicago, Burlington & Quincy Railroad (East).

Average number of days on.....		Arriving Road	T. R. R. A.	Departing Road	Total Time
Handled via Eads for through movement on	Mo. Pac.	1.0	*	1.2	2.9
	St. L.-S. F.....	1.2	*	1.0	2.7
Handled via Merchants for through movement on.....	M. K. & T.....	1.0	1.0	1.0	3.0
	Wabash—West	1.1	1.0	1.0	3.1
Handled via Wiggins for through movement on.....	Movement via Wiggins light and infrequent. No study made of this movement.				
Handled via Eads for delivery at local industries on.....	T. R. R. A.—St. L.....	*	1.5	*	2.1
	Mo. Pac.	1.0	*	3.2	5.0
	St. L.-S. F.....	*	1.0	2.0	3.6
	Wabash—West	1.4	*	2.4	4.6
Handled via Merchants for de- livery at local industries on.....	T. R. R. A.—St. L.....	1.0	1.6	—	2.6
Handled via Wiggins for de- livery at local industries on.....	T. R. R. A.—St. L.....	2.9	1.4	—	4.3
	Mo. Pac.	1.9	1.1	2.2	5.2
Total number of cars traced.....	77				
Number of cars discarded.....	10				
Number of cars completed.....	67 equals 87.5 per cent.				

Arriving on Chicago, Burlington & Quincy Railroad (West).

Average number of days on.....	Arriving Road	T. R. R. A.	Departing Road	Total Time
Handled via Eads for through movement on	Movement via Eads light and infrequent. No study made of this movement.			
Handled via Merchants for through movement on.....	St. L. S. W.....	*	1.0	* 1.4
	St. L.-S. F.....	*	1.0	* 2.2
Handled via Wiggins for through movement on.....	B. & O.....	1.0	2.0	1.0 4.0
	C. & A.....	1.7	1.3	1.0 4.0
	M. P.—Dupo	*	1.2	1.4 2.6
	I. C.	1.0	1.5	* 3.0
	Southern	1.0	1.6	* 3.0
	M. & O.	1.0	1.4	* 3.0
	St. L. S. W.....	*	1.4	* 1.7
	Penn.	*	1.1	1.5 3.2
	C. C. C. & St. L.....	*	1.4	2.1 3.8
Handled via Eads for delivery at local industries on.....	Movement via Eads light and infrequent. No study made of this movement.			
Handled via Merchants for de- livery at local industries on.....	Southern	2.6	1.4	1.5 5.5
	T. R. R. A.—St. L.....	1.2	1.2	— 2.4
Handled via Wiggins for de- livery at local industries on.....	Penn.	1.2	1.1	2.0 4.3
Total number of cars traced.....	133			
Number of cars discarded.....	6			
Number of cars completed.....	127 equals 95 per cent.			

Arriving on Cleveland, Cincinnati, Chicago & St. Louis Railway.

Average number of days on.....		Arriving Road	T. R. R. A.	Departing Road	Total Time
Handled via Eads for through movement on	Mo. Pac.	*	1.0	2.0	3.0
	St. L.-S. F.	*	1.0	1.2	2.5
Handled via Merchants for through movement on.....	M. K. & T.	*	1.0	1.1	2.4
	C. R. P. & P.	*	1.0	1.4	2.6
Handled via Wiggins for through movement on.....	Wabash—West	*	1.0	1.0	2.2
	Mo. Pac.—Dupo	*	*	1.3	3.0
	St. L. S. W.	*	1.0	*	1.8
Handled via Eads for delivery at local industries on.....	T. R. R. A.	*	2.0	—	2.7
	Mo. Pac.	*	1.0	1.4	3.0
	St. L.-S. F.	*	1.3	1.0	2.5
Handled via Merchants for de- livery at local industries on.....	T. R. R. A.	1.0	1.2	—	2.2
Handled via Wiggins for de- livery at local industries on.....	T. R. R. A.	*	1.5	—	2.1
	Mo. Pac.	*	1.0	2.1	3.4
	Wabash—West	*	1.0	1.5	3.2
	C. B. & Q.—West	*	1.0	2.4	4.1
Total number of cars traced.....		150			
Number of cars discarded.....		17			
Number of cars completed.....		133 equals 88.5 per cent.			

Arriving on Chicago, Peoria & St. Louis Railroad.

Average number of days on.....		Arriving Road	T. R. R. A.	Departing Road	Total Time
Handled via Eads for through movement on	Movement via Eads light and infrequent. No study made of this movement.				
Handled via Merchants for through movement on.....	Movement via Merchants light and infrequent. No study made of this movement.				
Handled via Wiggins for through movement on.....	I. C.	1.4	1.2	1.0	3.6
	L. & N.	*	1.7	2.0	4.1
Total number of cars traced.....		20			
Number of cars discarded.....		0			
Number of cars completed.....		20 equals 100 per cent.			

Arriving on Chicago, Rock Island & Pacific Railway.

Average number of days on.....	Arriving Road	T. R. R. A.	Departing Road	Total Time
Handled via Eads for through movement on	Movement via Eads light and infrequent. No study made of this movement.			
Handled via Merchants for through movement on.....	B. & O.	*	1.0	1.2
	C. & E. I.	*	1.0	*
	I. C.	*	1.2	1.2
	L. & N.	1.1	1.8	*
	M. & O.	*	1.7	*
	Southern	*	1.3	1.0
	Penn.	*	1.0	1.1
	T. St. L. & W.	*	1.1	*
	C. C. C. & St. L.	*	1.5	1.2
Handled via Wiggins for through movement on.....	Movement via Wiggins light and infrequent. No study made of this movement.			
Handled via Eads for delivery at local industries on.....	Movement via Eads light and infrequent. No study made of this movement.			
Handled via Merchants for delivery at local industries on.....	T. R. R. A.—St. L.	1.0	2.0	—
	Mo. Pac.	1.1	1.3	2.4
Handled via Wiggins for delivery at local industries on.....	Mfrs.	*	1.5	2.1
Total number of cars traced.....	120			
Number of cars discarded.....	16			
Number of cars completed.....	104 equals 86.5 per cent.			

Arriving on East St. Louis & Suburban Railway.

Average number of days on.....	Arriving Road	T. R. R. A.	Departing Road	Total Time
Handled via Eads for through movement on	Movement via Eads light and infrequent. No study made of this movement.			
Handled via Merchants for through movement on.....	M. K. & T.	*	1.0	1.5
	St. L.-S. F.	*	1.8	3.2
	C. R. I. & P.	*	1.0	1.0
Handled via Wiggins for through movement on.....	Movement via Wiggins light and infrequent. No study made of this movement.			
Handled via Eads for delivery at local industries on.....	Movement via Eads light and infrequent. No study made of this movement.			
Handled via Merchants for delivery at local industries on.....	T. R. R. A.—St. L.	*	1.7	—
	Mo. Pac.	*	1.0	2.1
	St. L.-S. F.	*	1.6	2.1
	Wabash—West	*	1.2	1.2
Handled via Wiggins for delivery at local industries on.....	Movement via Wiggins light and infrequent. No study made of this movement.			
Total number of cars traced.....	70			
Number of cars discarded.....	3			
Number of cars completed.....	67 equals 96 per cent.			

Arriving on Illinois Central Railroad.

Average number of days on.....	Arriving Road	T. R. R. A.	Departing Road	Total Time
Handled via Eads for through movement on	Mo. Pac.	*	1.0	2.7
	St. L.-S. F.	1.4	1.7	4.1
Handled via Merchants for through movement on.....	M. K. & T.	2.2	*	4.0
	C. R. I. & P.	*	*	2.2
Handled via Wiggins for through movement on.....	C. B. & Q.	*	1.1	3.3
	Wabash—West	*	1.4	2.0
Handled via Eads for delivery at local industries on.....	T. R. R. A.—St. L.	1.5	—	2.9
	Mo. Pac.	1.5	2.5	5.0
	St. L.-S. F.	1.0	1.9	3.6
	Wabash—West	1.0	2.5	4.8
Handled via Merchants for de- livery at local industries on.....	T. R. R. A.—St. L.	1.6	—	3.7
Handled via Wiggins for de- livery at local industries on.....	T. R. R. A.—St. L.	2.1	—	3.4
	Mo. Pac.	1.4	2.0	4.9
	Wabash—West	*	*	2.6
	Mfrs.	*	1.5	3.4
Total number of cars traced.....	150			
Number of cars discarded.....	23			
Number of cars completed.....	127 equals 84.5 per cent.			

Arriving on Litchfield & Madison Railroad.

Average number of days on.....	Arriving Road	T. R. R. A.	Departing Road	Total Time
Handled via Eads for through movement on	Movement via Eads light and infrequent. No study made of this movement.			
Handled via Merchants for through movement on.....	Mo. Pac.	*	1.3	1.8
Handled via Wiggins for through movement on.....	Movement via Wiggins light and infrequent. No study made of this movement.			
Handled via Eads for delivery at local industries on.....	Movement via Eads light and infrequent. No study made of this movement.			
Handled via Merchants for de- livery at local industries on.....	Mo. Pac.	*	1.5	3.0
	T. R. R. A.—St. L.	*	—	1.7
	Wabash—West	*	1.5	3.0
Handled via Wiggins for de- livery at local industries on.....	Movement via Wiggins light and infrequent. No study made of this movement.			
Total number of cars traced.....	50			
Number of cars discarded.....	3			
Number of cars completed.....	47 equals 94 per cent.			

Arriving on Louisville & Nashville Railroad.

Average number of days on.....	Arriving Road	T. R. R. A.	Departing Road	Total Time
Handled via Eads for through movement on				
Mo. Pac.	*	1.2	2.0	3.7
St. L.-S. F.	*	1.0	*	2.6
Handled via Merchants for through movement on.....				
M. K. & T.	*	*	1.3	2.7
C. R. I. & P.	1.5	*	*	2.6
Handled via Wiggins for through movement on.....				
Wabash—West	1.0	1.0	1.0	3.0
Mo. Pac.—Dupo	*	1.0	2.1	3.9
C. P. & St. L.	*	1.0	*	1.8
Wabash—East	*	1.5	*	2.5
Handled via Eads for delivery at local industries on.....				
T. R. R. A.—St. L.	*	1.2	—	1.9
St. L.-S. F.	*	1.1	1.4	2.7
Handled via Merchants for delivery at local industries on.....				
T. R. R. A.—St. L.	1.7	1.4	—	3.1
Handled via Wiggins for delivery at local industries on.....				
T. R. R. A.—St. L.	*	1.1	—	2.0
Mo. Pac.	*	1.1	1.6	3.0
Total number of cars traced.....	140			
Number of cars discarded.....	15			
Number of cars completed.....	125 equals 83.5 per cent.			

Arriving on Mobile & Ohio Railroad.

Average number of days on.....	Arriving Road	T. R. R. A.	Departing Road	Total Time
Handled via Eads for through movement on				
St. L.-S. F.	1.2	1.8	2.6	5.6
Handled via Merchants for through movement on.....	Movement via Merchants light and infrequent. No study made of this movement.			
Handled via Wiggins for through movement on.....				
C. B. & Q.—West.....	1.0	*	1.2	2.9
Wabash—West	1.3	1.0	1.7	4.0
B. & O.	2.2	1.0	1.5	4.7
C. & A.	2.4	1.0	1.6	5.0
C. B. & Q.—East.....	*	1.0	1.5	3.4
C. P. & St. L.	1.0	1.0	2.3	4.3
I. C.	1.4	1.0	1.0	3.4
T. St. L. & W.	1.4	1.1	*	3.1
Penn.	2.4	1.0	1.4	4.8
Wabash—East	1.2	1.0	1.1	3.3
C. C. C. & St. L.	1.2	*	1.2	2.8
Handled via Eads for delivery at local industries on.....				
T. R. R. A.—St. L.	*	1.7	—	2.3
Mo. Pac.	1.1	1.1	2.6	4.8
Handled via Merchants for delivery at local industries on.....				
T. R. R. A.—St. L.	*	1.7	—	2.6
Handled via Wiggins for delivery at local industries on.....				
Mo. Pac.	*	1.5	2.7	5.0
Mfrs.	1.0	*	1.5	3.2
Wabash—West	*	1.0	2.0	3.3
Total number of cars traced.....	176			
Number of cars discarded.....	17			
Number of records completed.....	159 equals 90.5 per cent.			

Arriving on Manufacturers Railway.

Average number of days on.....	Arriving	Departing	Total		
	Road	T. R. R. A.	Road	Time	
Handled via Eads for through movement on	Movement via Eads light and infrequent. No study made of this movement.				
Handled via Merchants for through movement on.....	Movement via Merchants light and infrequent. No study made of this movement.				
Handled via Wiggins for through movement on.....	C. B. & O.—West.....	*	1.2	1.6	3.0
	M. K. & T.	*	2.1	*	2.8
	St. L.-S. F.	*	1.7	2.2	4.2
	Wabash—West	*	1.1	*	1.5
	Wabash—East	*	1.0	*	1.9
	C. C. C. & St. L.....	*	1.0	1.4	2.6
	I. C.	*	1.6	*	2.3
	Penn.	*	2.0	*	2.6
	C. & E. I.....	*	*	*	*
Handled via Eads for delivery at local industries on.....	Movement via Eads light and infrequent. No study made of this movement.				
Handled via Merchants for delivery at local industries on.....	Movement via Merchants light and infrequent. No study made of this movement.				
Handled via Wiggins for delivery at local industries on.....	T. R. R. A.—St. L.—	*	2.0	—	2.4
Total number of cars traced.....	100				
Number of cars discarded.....	7				
Number of cars completed.....	93 equals 93 per cent.				

Arriving on Missouri, Kansas & Texas Railway.

Average number of days on.....	Arriving	Departing	Total		
	Road	T. R. R. A.	Road	Time	
Handled via Eads for through movement on	Movement via Eads light and infrequent. No study made of this movement.				
Handled via Merchants for through movement on.....	B. & O.	*	1.2	*	2.3
	C. & A.	*	1.8	*	3.5
	C. P. & St. L.....	*	1.2	*	2.4
	I. C.	*	*	1.3	1.8
	L. & N.	*	1.0	1.0	2.6
	T. St. L. & W.....	*	*	*	1.0
	Penn.	*	*	*	2.0
	Wabash—East	*	1.1	1.1	3.1
	C. C. C. & St. L.....	*	1.2	1.0	2.5
	C. & E. I.	*	1.0	*	1.2
Handled via Wiggins for through movement on.....	Movement via Wiggins light and infrequent. No study made of this movement.				
Handled via Eads for delivery at local industries on.....	Movement via Eads light and infrequent. No study made of this movement.				
Handled via Merchants for delivery at local industries on.....	T. R. R. A.—St. L.....	2.8	3.2	—	6.0
	Mfrs.	1.7	1.8	1.6	5.1
Handled via Wiggins for delivery at local industries on.....	Movement via Wiggins light and infrequent. No study made of this movement.				
Total number of cars traced.....	120				
Number of cars discarded.....	11				
Number of cars completed.....	109 equals 91 per cent.				

Arriving on Missouri Pacific Railroad.

Average number of days on.....	Arriving Road	T. R. R. A.	Departing Road	Total Time
Handled via Eads for through movement on	B. & O.	*	*	2.6
	C. & E. I.	1.3	*	2.6
	C. P. & St. L.	1.3	*	3.5
	I. C.	1.0	*	2.7
	L. & N.	1.1	*	3.7
	Southern	*	*	2.4
	T. St. L. & W.	*	1.4	2.2
	Penn.	*	1.1	2.5
	Wabash—East	*	1.2	2.7
	C. C. C. & St. L.	1.0	1.1	3.0
Handled via Merchants for through movement on.....	Movement via Merchants light and infrequent. No study made of this movement.			
Handled via Wiggins for through movement on.....	C. B. & Q.—West....	1.4	2.3	3.9
	C. & A.	*	1.7	4.2
	C. & E. I.	1.0	*	2.7
	C. P. & St. L.	1.4	*	2.8
	I. C.	*	1.0	3.6
	L. & N.	*	1.2	3.0
	St. L. S. W.	2.0	1.2	3.5
	Southern	*	1.4	3.0
	T. St. L. & W.	2.0	*	3.4
	Penn.	*	1.7	3.5
	Wabash—East	1.3	1.2	3.7
	C. C. C. & St. L.	1.2	1.6	4.2
Handled via Eads for delivery at local industries on.....	T. R. R. A.—St. L.	2.5	—	3.8
Handled via Merchants for delivery at local industries on.....	T. R. R. A.—St. L.	*	*	2.8
Handled via Wiggins for delivery at local industries on.....	T. R. R. A.—St. L.—	3.1	—	5.1
	C. B. & Q.—West....	2.0	2.2	4.8
	C. B. & Q.—East	*	*	1.9
	T. R. R. A.—E. St. L.	1.0	*	3.0
Total number of cars traced.....	308			
Number of cars discarded.....	36			
Number of cars completed.....	272 equals 88 per cent.			

Arriving on Missouri Pacific (Dupo).

Average number of days on.....	Arriving Road	T. R. R. A.	Departing Road	Total Time
Handled via Eads for through movement on	Movement via Eads light and infrequent. No study made of this movement.			
Handled via Merchants for through movement on.....	Mo. Pac.—West	1.5	1.7	4.3
	Wabash—East	1.2	1.5	4.0
	C. & E. I.	1.7	*	2.4
Handled via Wiggins for through movement on.....	C. B. & Q.—West....	1.0	2.0	4.0
	Wabash—West	1.2	1.7	3.6
	Mo. Pac.—West	2.0	*	4.0
	B. & O.	1.5	2.2	4.7

Arriving on Missouri Pacific (Dupo).

Average number of days on.....	Arriving Road	T. R. R. A.	Departing Road	Total Time	
C. & A.	1.1	1.2	2.2	4.5	
C. B. & Q.—East	1.8	1.5	1.9	5.2	
C. P. & St. L.	1.8	1.2	*	3.7	
L. & N.	1.9	1.1	1.8	4.8	
C C. C. & St. L.	2.5	1.0	*	4.1	
Handled via Eads for delivery at local industries on.....	Movement via Eads light and infrequent. No study made of this movement.				
Handled via Merchants for de- livery at local industries on.....	Wabash—East	1.2	1.3	1.5	4.0
	T. R. R. A.—St. L.	1.5	1.5	—	3.0
	Mo. Pac.	1.5	1.1	1.7	4.3
Handled via Wiggins for de- livery at local industries on.....	T. R. R. A.—St. L.	2.4	2.6	—	5.0
	Mfrs.	2.5	1.5	1.5	5.6
	Mo. Pac.	2.2	1.2	2.6	6.0
Total number of cars traced.....	171				
Number of cars discarded.....	11				
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Number of cars completed.....	160 equals 93.5 per cent.				

Arriving on Pennsylvania Railroad.

Average number of days on.....	Arriving Road	T. R. R. A.	Departing Road	Total Time	
Handled via Eads for through movement on	Mo. Pac.	1.4	1.2	1.1	3.7
	St. L.-S. F.	*	1.0	1.2	2.5
Handled via Merchants for through movement on.....	M. K. & T.	1.1	*	1.1	2.7
	C. R. I. & P.	1.0	*	1.0	2.2
Handled via Wiggins for through movement on.....	C. & A.	1.0	*	1.5	2.7
	M. & O.	1.1	*	*	2.2
	C. B. & Q.—West.....	1.0	1.0	1.9	3.9
	Wabash—West	*	1.0	2.0	3.7
Handled via Eads for delivery at local industries on.....	T. R. R. A.—St. L.....	1.0	2.1	—	3.1
	Mo. Pac.	1.8	*	2.5	4.5
	St. L.-S. F.	1.5	1.0	2.5	5.0
	Wabash—West	1.5	*	2.3	4.2
Handled via Merchants for de- livery at local industries on.....	T. R. R. A.—St. L.....	1.2	2.1	—	3.3
Handled via Wiggins for de- livery at local industries on.....	T. R. R. A.—St. L.....	*	1.4	—	2.0
	Mo. Pac.	*	1.0	2.2	4.1
Total number of cars traced.....	150				
Number of cars discarded.....	12				
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Number of cars completed.....	138 equals 92 per cent.				

Arriving on St. Louis & O'Fallon Railroad.

Average number of days on.....	Arriving	Departing	Total
Road	T. R. R. A.	Road	Time
Handled via Eads for through movement on	Movement via Eads light and infrequent. No study made of this movement.		
Handled via Merchants for through movement on.....	C. R. I. & P. *	1.0	1.0
	Wabash—West	*	1.7
Handled via Wiggins for through movement on.....	Movement via Wiggins light and infrequent. No study made of this movement.		
Handled via Eads for delivery at local industries on.....	Movement via Eads light and infrequent. No study made of this movement.		
Handled via Merchants for delivery at local industries on.....	Mo. Pac. *	1.0	2.5
	T. R. R. A.—St. L. *	2.0	—
	St. L.-S. F. *	1.8	3.4
	Wabash—West	1.4	1.6
Handled via Wiggins for delivery at local industries on.....	Mo. Pac. *	1.2	2.4
	Mfrs. *	*	2.0
Total number of cars traced.....	80		
Number of cars discarded.....	1		
Number of cars completed.....	79 equals 99 per cent.		

Arriving on St. Louis-San Francisco Railway.

Average number of days on.....	Arriving	Departing	Total
Road	T. R. R. A.	Road	Time
Handled via Eads for through movement on	B. & O. *	1.0	1.1
	C. & A. 1.8	1.2	1.0
	C. P. & St. L. *	1.8	1.0
	I. C. 2.0	1.3	1.0
	M. & O. 1.2	1.2	*
	Southern *	1.3	*
	T. St. L. & W. *	*	*
	Penn. 1.1	1.3	1.8
	Wabash—East	*	1.4
	C. C. C. & St. L. *	1.3	1.2
Handled via Merchants for through movement on.....	C. B. & Q.—West.... *	1.3	*
Handled via Wiggins for through movement on.....	Movement via Wiggins light and infrequent. No study made of this movement.		
Handled via Eads for delivery at local industries on.....	C. & A. *	1.8	2.0
	L. & N. *	1.0	2.2
	Penn. *	1.0	2.5
Handled via Merchants for delivery at local industries on.....	C. B. & Q.—West *	1.4	2.5
	T. R. R. A.—St. L. 1.8	1.3	—
Handled via Wiggins for delivery at local industries on.....	Movement via Wiggins light and infrequent. No study made of this movement.		
Total number of cars traced.....	152		
Number of cars discarded.....	16		
Number of cars completed.....	136 equals 90 per cent.		

Arriving on St. Louis Southwestern Railway.

Average number of days on.....	Arriving Road	T. R. R. A.	Departing Road	Total Time
Handled via Eads for through movement on	Movement via Eads light and infrequent. No study made of this movement.			
Handled via Merchants for through movement on.....	B. & O.....	*	1.2	2.4
	Wabash—East	*	1.2	1.5
	C. & E. I.....	*	*	1.5
Handled via Wiggins for through movement on.....	C. B. & Q.—West.....	*	1.1	1.5
	Wabash—West	*	1.0	*
	C. & A.	*	1.1	2.5
	C. P. & St. L.....	*	1.2	1.4
	C. C. C. & St. L.....	*	1.0	1.3
Handled via Eads for delivery at local industries on.....	Movement via Eads light and infrequent. No study made of this movement.			
Handled via Merchants for delivery at local industries on.....	T. R. R. A.—St. L.....	*	2.5	—
	Mo. Pac.	*	2.4	2.5
Handled via Wiggins for delivery at local industries on.....	T. R. R. A.—St. L.....	1.0	2.0	—
	Mfrs.	*	1.0	1.6
Total number of cars traced.....	118			
Number of records discarded.....	9			
Number of cars completed.....	109 equals 92.5 per cent.			

Arriving on St. Louis, Troy & Eastern Railroad.

Average number of days on.....	Arriving Road	T. R. R. A.	Departing Road	Total Time
Handled via Eads for through movement on	Movement via Eads light and infrequent. No study made of this movement.			
Handled via Merchants for through movement on.....	C. & A.	1.0	1.6	2.9
	C. B. & Q.—West	*	1.5	2.2
	M. K. & T.....	*	*	1.6
	Mo. Pac.	*	*	1.4
Handled via Wiggins for through movement on.....	Movement via Wiggins light and infrequent. No study made of this movement.			
Handled via Eads for delivery at local industries on.....	Movement via Eads light and infrequent. No study made of this movement.			
Handled via Merchants for delivery at local industries.....	Mo. Pac.	*	1.3	1.8
	T. R. R. A.—St. L.....	*	1.3	—
	St. L.-S. F.	*	1.0	1.7
	Wabash—West	*	1.0	2.0
Handled via Wiggins for delivery at local industries on.....	Mfrs.	*	*	2.7
Total number of cars traced.....	100			
Number of cars discarded.....	5			
Number of cars completed.....	95 equals 95 per cent			

Arriving on Southern Railway.

Average number of days on.....	Arriving Road	T. R. R. A.	Departing Road	Total Time
Handled via Eads for through movement on				
Mo. Pac.	*	1.0	1.3	2.7
St. L.-S. F.	*	1.0	1.4	2.6
Handled via Merchants for through movement on.....				
M. K. & T.	*	1.2	1.2	3.0
C. R. I. & P.	*	1.0	1.5	2.7
Handled via Wiggins for through movement on.....	1.0	1.0	1.0	3.0
Handled via Eads for delivery at local industries on.....				
T. R. R. A.—St. L.	*	1.2	—	1.6
Mo. Pac.	1.0	1.0	2.7	4.7
St. L.-S. F.	*	1.0	1.3	2.6
Handled via Merchants for delivery at local industries on.....				
T. R. R. A.—St. L.	*	1.7	—	2.3
Handled via Wiggins for delivery at local industries on.....				
Mfrs.	*	1.1	2.0	3.8
Wabash—West	*	1.4	1.4	3.5
Total number of cars traced.....		110		
Number of cars discarded.....		17		
Number of cars completed.....		93		equals 84.5 per cent.

Originating on Terminal Railroad Association (East Side).

Average number of days on.....	Arriving Road	T. R. R. A.	Departing Road	Total Time
Handled via Eads for through movement on				
Movement via Eads light and infrequent. No study made of this movement.				
Handled via Merchants for through movement on.....				
B. & O.	—	1.0	1.2	2.2
C. & A.	—	1.0	3.7	4.7
Mo. Pac.—Dupo	—	1.1	1.1	2.2
Wabash—East	—	1.0	*	1.9
Penn.	—	1.0	1.0	2.1
C. C. C. & St. L.	—	1.3	1.1	2.4
I. C.	—	1.1	1.1	2.1
Handled via Wiggins for through movement on.....				
Movement via Wiggins light and infrequent. No study made of this movement.				
Handled via Eads for delivery at local industries on.....				
Movement via Eads light and infrequent. No study made of this movement.				
Handled via Merchants for delivery at local industries on.....				
Penn.	—	1.3	3.7	5.0
Handled via Wiggins for delivery at local industries on.....				
Movement via Wiggins light and infrequent. No study made of this movement.				
Total number of cars traced.....		130		
Number of cars discarded.....		7		
Number of cars completed.....		123		equals 94.5 per cent

Originating on Terminal Railroad Association (West Side).

Average number of days on.....	Arriving Road	T. R. R. A.	Departing Road	Total Time	
Handled via Eads for through movement on	C. B. & Q.—West....	—	1.9	1.1	3.0
	Mo. Pac.	—	1.4	1.0	2.4
	M. K. & T.	—	2.4	1.0	3.4
	St. L.-S. F.	—	1.0	2.0	3.0
	Wabash—West	—	1.0	1.0	2.0
Handled via Merchants for through movement on.....	C. B. & Q.—West	—	1.9	1.2	3.1
	Mo. Pac.	—	2.9	1.5	4.4
	M. K. & T.	—	1.7	1.0	2.7
Handled via Wiggins for through movement on.....	C. B. & Q.—West	—	*	*	1.8
	Mo. Pac.	—	1.2	1.0	2.2
Handled via Eads for delivery at local industries on.....	Movement via Eads light and infrequent. No study made of this movement.				
Handled via Merchants for de- livery at local industries on.....	Mo. Pac.	—	2.7	2.1	4.8
Handled via Wiggins for de- livery at local industries on.....	Movement via Wiggins light and infrequent. No study made of this movement.				
Total number of cars traced.....	110				
Number of cars discarded.....	19				
Number of cars completed.....	91 equals 83 per cent.				

Arriving on Toledo, St. Louis & Western Railway.

Average number of days on.....	Arriving	Departing	Total		
	Road	T. R. R. A.	Road	Time	
Handled via Eads for through movement on	Movement via Eads light and infrequent. No study made of this movement.				
Handled via Merchants for through movement on.....	M. K. & T.	*	1.0	1.1	2.7
	Mo. Pac.	*	1.0	1.1	2.5
	St. L.-S. F.	1.5	*	1.5	3.0
	C. R. I. & P.	*	1.0	1.2	2.4
Handled via Wiggins for through movement on.....	Movement via Wiggins light and infrequent. No study made of this movement.				
Handled via Eads for delivery at local industries on.....	T. R. R. A.—St. L.	*	1.0	—	1.5
Handled via Merchants for delivery at local industries on.....	T. R. R. A.—St. L.	*	1.5	*	2.5
	Mo. Pac.	*	1.0	2.0	3.8
Handled via Wiggins for delivery at local industries on.....	T. R. R. A.—St. L.	*	1.7	—	2.1
	Mo. Pac.	*	1.2	2.9	4.6
Total number of cars traced.....	90				
Number of cars discarded.....	12				
<hr/>					
Number of cars completed.....	78 equals 87 per cent.				

Arriving on Wabash Railroad (East).

Average number of days on.....	Arriving	Departing	Total
	Road T. R. R. A.	Road	Time
Handled via Eads for through movement on			
Mo. Pac.	*	1.0	2.4
St. L.-S. F.	*	*	1.9
Handled via Merchants for through movement on.....			
M. K. & T.	*	1.2	2.0
Wabash—West	*	1.1	2.0
Handled via Wiggins for through movement on.....			
I. C.	2.9	*	4.6
St. L. S. W.	*	*	1.6
Mo. Pac.	*	*	1.9
Handled via Eads for delivery at local industries on.....			
T. R. R. A.—St. L.	*	—	2.3
Mo. Pac.	*	2.6	4.0
St. L.-S. F.	*	2.1	4.0
Wabash—West	*	3.0	3.4
Handled via Merchants for delivery at local industries on.....			
T. R. R. A.—St. L.	1.0	—	2.3
Handled via Wiggins for delivery at local industries on.....			
T. R. R. A.—St. L.	1.6	—	3.0
Mo. Pac.	*	3.0	4.5
Wabash—West	*	1.5	4.0
C. B. & Q. —West....	*	4.0	5.0
St. L. S. W.	*	*	1.8
Total number of cars traced.....	170		
Number of cars discarded.....	46		
Number of cars completed.....	124	equals 78 per cent.	

Arriving on Wabash Railroad (West).

Average number of days on.....	Arriving	Departing	Total
	Road T. R. R. A.	Road	Time
Handled via Eads for through movement on	Movement via Eads light and infrequent. No study made of this movement.		
Handled via Merchants for through movement on.....			
B. & O.	*	*	2.0
I. C.	*	*	1.9
M. & O.	*	*	1.0
Southern	*	*	1.0
Penn.	*	*	1.0
C. C. C. & St. L.	*	*	2.2
L. & N.	*	*	1.0
Handled via Wiggins for through movement on.....			
B. & O.	*	1.5	2.5
I. C.	1.4	*	3.3
M. & O.	2.5	1.0	5.0
Southern	1.0	1.0	3.1
Penn.	*	1.0	2.3
C. C. C. & St. L.	*	1.2	2.5
Handled via Eads for delivery at local industries on.....			
T. R. R. A.—E. St. L.	1.0	—	3.0
Handled via Merchants for delivery at local industries on.....			
T. R. R. A.—St. L.	1.3	—	3.8
Handled via Wiggins for delivery at local industries on.....			
Southern	2.0	2.5	5.6
Penn.	*	2.1	4.0
T. R. R. A.—St. L.	3.0	—	5.0
Mfrs.	1.5	1.5	3.7
Total number of cars traced.....	210		
Number of cars discarded.....	27		
Number of cars completed.....	183	equals 82 per cent.	

APPENDIX "G"—PROPOSED CARLOAD INTER-CHANGE THROUGH OUTER GROUP YARDS

Statement Showing Distribution of Carload Freight Between Group Yard No. 1 and Individual Roads.

Inbound Carloads Handled by Roads in Group Yard No. 1:	Brought In	Loaded Locally	Total
C. P. & St. L.....	1,581	.....	1,581
C. & A.....	5,365	81	5,446
C. C. C. & St. L.....	5,773	111	5,884
C. B. & Q. (East).....	4,261	.....	4,261
C. & E. I.....	2,667	.....	2,667
Wabash (East)	6,648	18	6,666
			<u>26,505</u>

For Delivery to Roads in Group No. 1:	For Through Movement	For Local Delivery	
C. P. & St. L.....	14	130	For "Local Delivery" consists principally of cars brought in by road named for delivery on its own rails, including a small number from other roads in the same group.
C. & A.....	73	463	
C. C. C. & St. L.....	88	2,037	
C. B. & Q. (East).....	71	212	
C. & E. I.....	51	470	
Wabash (East)	16	455	
	<u>313</u>	<u>3,767</u>	4,080

For Delivery to Roads in Group No. 2:			
I. C. (North).....	368	3	
L. & M.....	7	.....
T. St. L. & W.....	139	2	
St. L. T. & E.....	6	1	
	<u>520</u>	<u>6</u>	526

For Delivery to Roads in Group No. 3:			
Penn.	173	31	
B. & O.....	468	127	
C. B. & Q. (East).....	711	1	
L. & N.....	429	37	
St. L. & O'F.....	3	5	
E. St. L. & Sub.....	12	15	
	<u>1,796</u>	<u>216</u>	2,012

For Delivery to Roads in Group No. 4:			
Sou.	552	276	
St. L. & O. R.....	.....	.....
I. C. (South).....	549	4	
	<u>1,101</u>	<u>280</u>	1,381

For Delivery to Roads in Group No. 5:			
Mo. Pac.....	1,158	183	
St. L. S. W.....	869	13	
M. & O.....	526	4	
	<u>2,553</u>	<u>200</u>	2,753

**Statement Showing Distribution of Carload Freight Between Group Yard No. 1
and Individual Roads.**

	For Through Movement	For Local Delivery	
For Delivery to Roads in Group No. 6:			
M. K. & T.....	969	249	
C. B. & Q. (West).....	42	107	
Wabash (West).....	293	1,310	
C. R. I. & P.....	224	8	
	<hr/>	<hr/>	
	1,528	1,674	3,202
 For Delivery to Roads in Group No. 7:			
Mo. Pac.....	.....	.....
 For Delivery to Roads in Group No. 8:			
Mo. Pac.....	897	.....
St. L.-S. F.....	1,158	.....
	<hr/>	<hr/>	
	2,055	.....	2,055
 For Delivery to Roads in Mill Creek Valley:			
Mo. Pac.....	.....	553	
St. L.-S. F.....	.....	645	
Wabash (U. D.).....	.....	735	
	<hr/>	<hr/>	
	.....	1,933	1,933
 For Delivery to Roads in South St. Louis:			
Mo. Pac.....	.....	564	
Manufacturers .....	.....	60	
	<hr/>	<hr/>	
	.....	624	624
 For Delivery to T. R. R. on East Side:			
T. R. R.....	.....	857	
Merchants .....	.....	943	
Wiggins .....	.....	307	
	<hr/>	<hr/>	
	.....	2,107	2,107
 For Delivery to:			
Stock Yards.....	.....	2,081	
Alton & Sou.....	.....	112	
I. T. S.....	26	37	
	<hr/>	<hr/>	
	26	2,230	2,256
 For Delivery to T. R. R. on West Side:			
T. R. R.....	.....	1,706	
Merchants .....	.....	1,279	
Wiggins .....	.....	591	
	<hr/>	<hr/>	
	.....	3,576	3,576
		<hr/>	<hr/>
			26,505

**Statement Showing Distribution of Carload Freight Between Group Yard No. 2
and Individual Roads.**

Inbound Carloads Handled by Roads in Group Yard No. 2:	Brought In	Loaded Locally	Total
I. C. (North).....	2,370	.....	2,370
L. & M.....	2,334	.....	2,334
T. St. L. & W.....	2,894	9	2,903
St. L. T. & E.....	3,201	.....	3,201
			<hr/> 10,808
For Delivery to Roads in Group No. 2:	For Through Movement	For Local Delivery	
I. C. (North).....	10	271	For "Local Delivery" consists principally of cars brought in by road named for delivery on its own rails, including a small number from other roads in the same group.
L. & M.....	.....	.....
T. St. L. & W.....	7	400	
St. L. T. & E.....	2	.....
	<hr/> 19	<hr/> 671	
			690
For Delivery to Roads in Group No. 1:			
C. P. & St. L.....	13	41	
C. & A.....	208	.....
C. C. C. & St. L.....	11	1	
C. B. & O. (East).....	84	5	
C. & E. I.....	4	.....
Wabash (East).....	26	.....
	<hr/> 346	<hr/> 47	393
For Delivery to Roads in Group No. 3:			
Penn.	14	4	
B. & O.....	27	3	
C. B. & O. (East).....	28	2	
L. & N.....	43	9	
St. L. & O'F.....	.....	.....
E. St. L. & Sub.....	.....	3	
	<hr/> 112	<hr/> 21	133
For Delivery to Roads in Group No. 4:			
Sou.	13	127	
St. L. & O. R.....	.....	.....
I. C. (South).....	708	.....
	<hr/> 721	<hr/> 127	848
For Delivery to Roads in Group No. 5:			
Mo. Pac.....	361	107	
St. L.-S. W.....	390	.....
M. & O.....	15	.....
	<hr/> 766	<hr/> 107	873

**Statement Showing Distribution of Carload Freight Between Group Yard No. 2
and Individual Roads.**

For Delivery to Roads in Group No. 6:	For Through Movement	For Local Delivery	
M. K. & T.....	849	15	
C. B. & Q. (West).....	165	6	
Wabash (West).....	130	561	
C. R. I. & P.....	101	30	
	<hr/>	<hr/>	
	1,245	612	1,857
 For Delivery to Roads in Group No. 7:			
Mo. Pac.....	.....	.....
 For Delivery to Roads in Group No. 8:			
Mo. Pac.....	404	.....
St. L.-S. F.....	397	.....
	<hr/>	<hr/>	
	801	.....	801
 For Delivery to Mill Creek Valley:			
Mo. Pac.....	.....	530	
St. L.-S. F.....	.....	307	
Wabash (U. D.).....	.....	445	
	<hr/>	<hr/>	
	.....	1,282	1,282
 For Delivery to Roads in South St. Louis:			
Mo. Pac.....	.....	384	
Manufacturers .....	.....	106	
	<hr/>	<hr/>	
	.....	490	490
 For Delivery to T. R. R. on East Side:			
T. R. R.....	.....	56	
Merchants .....	.....	591	
Wiggins .....	.....	67	
	<hr/>	<hr/>	
	.....	714	714
 For Delivery to:			
Stock Yards .....	.....	584	
A. & S.....	.....	416	
I. T. S.....	1	1	
	<hr/>	<hr/>	
	1	1,001	1,002
 For Delivery to T. R. R. on West Side:			
T. R. R.....	.....	308	
Merchants .....	.....	1,284	
Wiggins .....	.....	135	
	<hr/>	<hr/>	
	.....	1,725	1,725
			<hr/>
			10,808

**Statement Showing Distribution of Carload Freight Between Group Yard No. 3
and Individual Roads.**

Inbound Carloads Handled by Roads in Group Yard No. 3:	Brought In	Loaded Locally	Total
Penn.	5,984	869	6,853
B. & O.	4,841	546	5,387
C. B. & Q. (East).....	2,617	10	2,627
L. & N.	4,598	58	4,656
St. L. & O'F.....	1,946	.....	1,946
E. St. L. & Sub.....	2,750	74	2,824
			<hr/> 24,293
For Delivery to Roads in Group No. 3:	For Through Movement	For Local Delivery	
Penn.	46	1,204	For "Local Delivery" con- sists principally of cars brought in by road named for delivery on its own rails, including a small number from other roads in the same group.
B. & O.	35	600	
C. B. & Q. (East).....	144	67	
L. & N.	98	313	
St. L. & O'F.....	.....	2	
E. St. L. & Sub.....	.....	3	
	<hr/> 323	<hr/> 2,189	2,512
For Delivery to Roads in Group No. 1:			
C. P. & St. L.	130	5	
C. & A.	941	2	
C. C. C. & St. L.	28	2	
C. B. & Q. (East).....	2,016	2	
C. & E. I.	35	.....
Wabash (East)	456	.....
	<hr/> 3,606	<hr/> 11	3,617
For Delivery to Roads in Group No. 2:			
I. C. (North).....	113	1	
L. & M.	5	.....
T. St. L. & W.	34	.....
St. L. T. & E.	14	.....
	<hr/> 166	<hr/> 1	167
For Delivery to Roads in Group No. 4:			
Sou.	190	172	
St. L. & O. R. ....	.....	.....
I. C. (South).....	172	3	
	<hr/> 362	<hr/> 175	537
For Delivery to Roads in Group No. 5:			
Mo. Pac.	1,110	585	
St. L.-S. W.	602	24	
M. & O.	183	2	
	<hr/> 1,895	<hr/> 611	2,506

Statement Showing Distribution of Carload Freight Between Group Yard No. 3 and Individual Roads.

For Delivery to Roads in Group No. 6:	For Through Movement	For Local Delivery	
M. K. & T.....	840	164	
C. B. & Q. (West).....	85	47	
Wabash (West).....	590	350	
C. R. I. & P.....	965	35	
	<hr/> 2,480	<hr/> 596	3,076
For Delivery to Roads in Group No. 7:			
Mo. Pac.....	.....	.....
For Delivery to Roads in Group No. 8:			
Mo. Pac.....	799	.....
St. L.-S. F.....	1,168	.....
	<hr/> 1,967	<hr/>	1,967
For Delivery to Roads in Mill Creek Valley:			
Mo. Pac.....	.....	1,067	
St. L.-S. F.....	.....	648	
Wabash (U.D.).....	.....	378	
	<hr/>	<hr/> 2,093	2,093
For Delivery to Roads in South St. Louis:			
Mo. Pac.....	.....	863	
Manufacturers .....	.....	235	
	<hr/>	<hr/> 1,098	1,098
For Delivery to T. R. R. on East Side:			
T. R. R.....	.....	216	
Merchants .....	.....	1,201	
Wiggins .....	.....	133	
	<hr/>	<hr/> 1,550	1,550
For Delivery to:			
Stock Yards .....	.....	978	
A. & S.....	.....	424	
I. T. S.....	4	15	
	<hr/> 4	<hr/> 1,417	1,421
For Delivery to T. R. R. on West Side:			
T. R. R.....	.....	873	
Merchants .....	.....	2,205	
Wiggins .....	.....	671	
	<hr/>	<hr/> 3,749	3,749
			<hr/> 24,293

**Statement Showing Distribution of Carload Freight Between Group Yard No. 4
and Individual Roads.**

Inbound Carloads Handled by Roads in Group No. 4:	Brought In	Loaded Locally	Total
Sou.	6,766	973	7,739
St. L. & O. R. ....	.....	.....	.....
I. C. (South)	8,389	19	8,408
			<u>16,147</u>
For Delivery to Roads in Group No. 4:	For Through Movement	For Local Delivery	
Sou.	20	1,106	For "Local Delivery" consists principally of cars brought in by road named for delivery on its own rails, including a small number from other roads in the same group.
St. L. & O. R. ....	.....	.....
I. C. (South)	27	964	
	<u>47</u>	<u>2,070</u>	
			2,117
For Delivery to Roads in Group No. 1:			
C. P. & St. L.	262	2	
C. & A.	898	1	
C. C. C. & St. L.	19	2	
C. B. & Q. (East)	788	14	
C. & E. I.	28	.....
Wabash (East)	507	56	
	<u>2,502</u>	<u>75</u>	2,577
For Delivery to Roads in Group No. 2:			
I. C. (North)	2,550	.....
L. & M.	5	.....
T. St. L. & W.	27	.....
St. L., T. & E.	18	.....
	<u>2,600</u>	.....	2,600
For Delivery to Roads in Group No. 3:			
Penn.	65	133	
B. & O.	34	12	
C. B. & Q.	263	4	
L. & N.	23	2	
St. L. & O'F. ....	.....	.....
E. St. L. & Sub. ....	.....	4	
	<u>385</u>	<u>155</u>	540
For Delivery to Roads in Group No. 5:			
Mo. Pac.	671	85	
St. L.-S. W.	149	1	
M. & O.	807	.....
	<u>1,627</u>	<u>86</u>	1,713

**Statement Showing Distribution of Carload Freight Between Group Yard No. 4
and Individual Roads.**

For Delivery to Roads in Group No. 6:	For Through Movement	For Local Delivery	
M. K. & T.....	154	.....
C. B. & Q. (West).....	146	93	
Wabash (West).....	344	654	
C. R. I. & P.....	353	45	
	<hr/>	<hr/>	
	997	792	1,789
 For Delivery to Roads in Group No. 7:			
Mo. Pac.....	12	.....	12
 For Delivery to Roads in Group No. 8:			
Mo. Pac.....	204	.....
St. L.-S. F.....	518	.....
	<hr/>	<hr/>	
	722		722
 For Delivery to Roads in Mill Creek Valley:			
Mo. Pac.....	.....	267	
St. L.-S. F.....	.....	107	
Wabash (U. D.).....	.....	115	
	<hr/>	<hr/>	
		489	489
 For Delivery to Roads in South St. Louis:			
Mo. Pac.....	.....	141	
Manufacturers .....	.....	202	
	<hr/>	<hr/>	
		343	343
 For Delivery to T. R. R. on East Side:			
T. R. R.....	.....	30	
Merchants .....	.....	612	
Wiggins .....	.....	79	
	<hr/>	<hr/>	
		721	721
 For Delivery to:			
Stock Yards .....	.....	651	
A. & S.....	.....	463	
I. T. S.....	.....	25	
	<hr/>	<hr/>	
		1,139	1,139
 For Delivery to T. R. R. on West Side:			
T. R. R.....	.....	611	
Merchants .....	.....	518	
Wiggins .....	.....	256	
	<hr/>	<hr/>	
		1,385	1,385
			<hr/>
			16,147

**Statement Showing Distribution of Carload Freight Between Group Yard No. 5
and Individual Roads.**

Inbound Carloads Handled by Roads in Group Yard No. 5:	Brought In	Loaded Locally	Total
Mo. Pac.....	12,916	.....	12,916
St. L.-S. W.....	4,538	.....	4,538
M. & O.....	4,708	9	4,717
			<u>22,171</u>
For Delivery to Roads in Group No. 5:	For Through Movement	For Local Delivery	
Mo. Pac.....	1	.....
St. L.-S. W.....	10	20	
M. & O.....	.....	398	
	<u>11</u>	<u>418</u>	<u>429</u>
For Delivery to Roads in Group No. 1:			
C. P. & St. L.....	884	7	
C. & A.....	1,524	.....
C. C. C. & St. L.....	1,003	4	
C. B. & Q. (East).....	328	.....
C. & E. I.....	739	.....
Wabash (East).....	2,064	1	
	<u>6,542</u>	<u>12</u>	<u>6,554</u>
For Delivery to Roads in Group No. 2:			
I. C. (North).....	954	2	
L. & M.....	25	.....
T. St. L. & W.....	1,299	7	
St. L. T. & E.....	26	2	
	<u>2,304</u>	<u>11</u>	<u>2,315</u>
For Delivery to Roads in Group No. 3:			
Penn.	1,389	35	
B. & O.....	673	3	
C. B. & Q.....	110	104	
L. & N.....	183	4	
St. L. & O'F.....	3	2	
E. St. L. & Sub.....	8	6	
	<u>2,366</u>	<u>154</u>	<u>2,520</u>
For Delivery to Roads in Group No. 4:			
Sou.	500	44	
St. L. & O. R.....	.....	.....
I. C. (South).....	1,430	.....
	<u>1,930</u>	<u>44</u>	<u>1,974</u>

For "Local Delivery" consists principally of cars brought in by road named for delivery on its own rails, including a small number from other roads in the same group.

Statement Showing Distribution of Carload Freight Between Group Yard No. 5 and Individual Roads.

	For Through Movement	For Local Delivery	
For Delivery to Roads in Group No. 6:			
M., K. & T.....	20		
C. B. & Q. (West).....	585	31	
Wabash (West).....	210	181	
C. R. I. & P.....	20	5	
	<hr/> 835	<hr/> 217	1,052
For Delivery to Roads in Group No. 7:			
Mo. Pac.....	765		765
For Delivery to Roads in Group No. 8:			
Mo. Pac.....	94		
St. L.-S. F.....	75		169
	<hr/> 169	<hr/>	169
For Delivery to Roads in Mill Creek Valley:			
Mo. Pac.....		117	
St. L.-S. F.....		25	
Wabash (U. D.).....			
	<hr/>	<hr/> 142	142
For Delivery to Roads in South St. Louis:			
Mo. Pac.....		1,899	
Manufacturers		245	
	<hr/>	<hr/> 2,144	2,144
For Delivery to T. R. R. on East Side:			
T. R. R.....		90	
Merchants		932	
Wiggins		313	
	<hr/>	<hr/> 1,335	1,335
For Delivery to:			
Stock Yards		927	
A. & S.....		1,243	
I. T. S.....	50	7	
	<hr/> 50	<hr/> 2,177	2,227
For Delivery to T. R. R. on West Side:			
T. R. R.....		100	
Merchants		415	
Wiggins		30	
	<hr/>	<hr/> 545	545
			<hr/> 22,171

**Statement Showing Distribution of Carload Freight Between Group Yard No. 6
and Individual Roads.**

Inbound Carloads Handled by Roads in Group Yard No. 6:	Brought In	Loaded Locally	Total
M. K. & T.....	3,465	62	3,527
C. B. & Q. (West).....	4,897	308	5,205
Wabash (West).....	6,925	117	7,042
C. R. I. & P.....	2,627	92	2,719
			<hr/>
			18,493
For Delivery to Roads in Group No. 6:	For Through Movement	For Local Delivery	
M. K. & T.....	64	259	For "Local Delivery" con- sists principally of cars brought in by road named for delivery on its own rails, including a small number from other roads in the same group.
C. B. & Q. (West).....	39	1,556	
Wabash (West).....	86	1,952	
C. R. I. & P.....	40	189	
	<hr/>	<hr/>	
	229	3,956	4,185
For Delivery to Roads in Group No. 1:			
C. P. & St. L.....	70	.....
C. & A.....	180	.....
C. C. C. & St. L.....	742	.....
C. B. & Q. (East).....	27	.....
C. & E. I.....	292	.....
Wabash (East).....	297	10	
	<hr/>	<hr/>	
	1,608	10	1,618
For Delivery to Roads in Group No. 2:			
I. C. (North).....	440	2	
L. & M.....	90	.....
T. St. L. & W.....	681	.....
St. L. T. & E.....	.....	.....
	<hr/>	<hr/>	
	1,211	2	1,213
For Delivery to Roads in Group No. 3:			
Penn.	1,040	105	
B. & O.....	541	5	
C. B. & Q. (East).....	8	.....
L. & N.....	397	51	
St. L. & O'F.....	.....	.....
E. St. L. & Sub.....	.....	.....
	<hr/>	<hr/>	
	1,986	161	2,147
For Delivery to Roads in Group No. 4:			
Sou.	420	123	
St. L. & O. R.....	.....	.....
I. C. (South).....	659	.....
	<hr/>	<hr/>	
	1,079	123	1,202

**Statement Showing Distribution of Carload Freight Between Group Yard No. 6
and Individual Roads.**

	For Through Movement	For Local Delivery	
For Delivery to Roads in Group No. 5:			
Mo. Pac.....	220	.....
St. L.-S. W.....	89	48	
M. & O.....	831	21	
	<hr/>	<hr/>	
	1,140	69	1,209
For Delivery to Roads in Group No. 7:			
Mo. Pac.....	275	.....	275
For Delivery to Roads in Group No. 8:			
Mo. Pac.....	44	.....
St. L.-S. F.....	459	.....
	<hr/>	<hr/>	
	503		503
For Delivery to Roads in Mill Creek Valley:			
Mo. Pac.....	.....	448	
St. L.-S. F.....	.....	193	
Wabash (U. D.) .....	.....	281	
	<hr/>	<hr/>	
		922	922
For Delivery to Roads in South St. Louis:			
Mo. Pac.....	.....	426	
Manufacturers .....	.....	302	
	<hr/>	<hr/>	
		728	728
For Delivery to T. R. R. on East Side:			
T. R. R.....	.....	.....
Merchants .....	.....	580	
Wiggins .....	.....	168	
	<hr/>	<hr/>	
		748	748
For Delivery to:			
Stock Yards .....	.....	1,306	
A. & S.....	.....	.....
I. T. S.....	31	7	
	<hr/>	<hr/>	
	31	1,313	1,344
For Delivery to T. R. R. on West Side:			
T. R. R.....	.....	.....
Merchants .....	.....	2,006	
Wiggins .....	.....	393	
	<hr/>	<hr/>	
		2,399	2,399
			<hr/>
			18,493

**Statement Showing Distribution of Carload Freight Between Group Yard No. 7
and Individual Roads.**

Inbound Carloads Handled by Roads in Group Yard No. 7:	Brought In	Loaded Locally	Total
Mo. Pac.....	4,773	.....	4,773
For Delivery to Roads in Group No. 1:	For Through Movement	For Local Delivery	
C. P. & St. L.....	40	.....
C. & A.....	65	.....
C. C. C. & St. L.....	44	6	
C. B. & Q. (East).....	298	.....
C. & E. I.....	60	.....
Wabash (East).....	183	4	
	<hr/> 690	<hr/> 10	<hr/> 700
For Delivery to Roads in Group No. 2:			
I. C. (North).....	50	.....
L. & M.....	.....	.....
T. St. L. & W.....	120	.....
St. L. T. & E.....	15	.....
	<hr/> 185	<hr/>	<hr/> 185
For Delivery to Roads in Group No. 3:			
Penn.	60	12	
B. & O.....	120	4	
C. B. & Q. (East).....	100	44	
L. & N.....	62	8	
St. L. & O'F.....	8	8	
E. St. L. & Sub.....	.....	.....
	<hr/> 350	<hr/> 76	<hr/> 426
For Delivery to Roads in Group No. 4:			
Sou.	50	8	
St. L. & O. R.....	.....	.....
I. C. (South).....	75	3	
	<hr/> 125	<hr/> 11	<hr/> 136
For Delivery to Roads in Group No. 5:			
Mo. Pac.....	1,321	.....
St. L.-S. W.....	40	4	
M. & O.....	8	.....
	<hr/> 1,369	<hr/> 4	<hr/> 1,373

For "Local Delivery" consists principally of cars brought in by road named for delivery on its own rails, including a small number from other roads in the same group.

Statement Showing Distribution of Carload Freight Between Group Yard No. 7
and Individual Roads.

	For Through Movement	For Local Delivery	
For Delivery to Roads in Group No. 6:			
M. K. & T.....	9		
C. B. & Q. (West).....	136	221	
Wabash (West).....	34	50	
C. R. I. & P.....	5		
	<hr/>	<hr/>	
	184	271	455
For Delivery to Roads in Group No. 8:			
Mo. Pac.....	105		
St. L.-S. F.....	36		
	<hr/>	<hr/>	
	141		141
For Delivery to Roads in Mill Creek Valley:			
Mo. Pac.....			
St. L.-S. F.....		59	
Wabash (U. D.).....		95	
	<hr/>	<hr/>	
		154	154
For Delivery to Roads in South St. Louis:			
Mo. Pac.....		240	
Manufacturers			
	<hr/>	<hr/>	
		240	240
For Delivery to T. R. R. on East Side:			
T. R. R.....			
Merchants			
Wiggins		165	
	<hr/>	<hr/>	
		165	165
For Delivery to:			
Stock Yards.....			
A. & S.....		16	
I. T. S.....	35	1	
	<hr/>	<hr/>	
	35	17	52
For Delivery to T. R. R. on West Side:			
Wiggins		746	746
	<hr/>	<hr/>	<hr/>
			4,773

**Statement Showing Distribution of Carload Freight Between Group Yard No. 8
and Individual Roads.**

Inbound Carloads Handled by Roads in Ground Yard No. 8:	Brought In	Loaded Locally	Total
Mo. Pac.....	6,610	.....	6,610
St. L.-S. F.....	8,841	.....	8,841
			<u>15,451</u>
For Delivery to Roads in Group No. 1:	For Through Movement	For Local Delivery	
C. P. & St. L.....	189	.....
C. & A.....	382	53	
C. C. C. & St. L.....	792	4	
C. B. & Q. (East).....	7	.....
C. & E. I.....	1,319	.....
Wabash (East).....	236	12	
	<u>2,925</u>	<u>69</u>	<u>2,994</u>
For Delivery to Roads in Group No. 2:			
I. C. (North).....	229	.....
L. & M.....	65	8	
T. St. L. & W.....	602	35	
St. L. T. & E.....	39	.....
	<u>935</u>	<u>43</u>	<u>978</u>
For Delivery to Roads in Group No. 3:			
Penn.	902	172	
B. & O.....	474	45	
C. B. & Q. (East).....	2	.....
L. & N.....	208	74	
St. L. & O'F.....	.....	3	
E. St. L. & Sub.....	.....	.....
	<u>1,586</u>	<u>294</u>	<u>1,880</u>
For Delivery to Roads in Group No. 4:			
Sou.	302	57	
St. L. & O. R.....	.....	.....
I. C. (South).....	343	.....
	<u>645</u>	<u>57</u>	<u>702</u>
For Delivery to Roads in Group No. 5:			
Mo. Pac.....	537	.....
St. L.-S. W.....	8	.....
M. & O.....	132	.....
	<u>677</u>	.....	<u>677</u>
For Delivery to Roads in Group No. 6:			
M. K. & T.....	28	.....
C. B. & Q. (West).....	219	112	
Wabash (West).....	264	198	
C. R. I. & P.....	47	12	
	<u>558</u>	<u>322</u>	<u>880</u>
For Delivery to Roads in Group No. 8:			
Mo. Pac.....	93	.....
St. L.-S. F.....	150	.....
	<u>243</u>	.....	<u>243</u>

For "Local Delivery" consists principally of cars brought in by road named for delivery on its own rails, including a small number from other roads in the same group.

**Statement Showing Distribution of Carload Freight Between Group Yard No. 8
and Individual Roads.**

For Delivery to Roads in Mill Creek Valley:	For Through Movement	For Local Delivery	
Mo. Pac.....	.....	1,734	
St. L.-S. F.....	.....	414	
Wabash (U. D.).....	.....	547	
		<hr/>	
		2,695	2,695
 For Delivery to Roads in South St. Louis:			
Mo. Pac.....	.....	494	
Manufacturers .....	.....	49	
		<hr/>	
		543	543
 For Delivery to T. R. R. on East Side:			
T. R. R.....	.....	595	
Merchants .....	.....	.....
Wiggins .....	.....	.....
		<hr/>	
		595	595
 For Delivery to:			
Stock Yards .....	.....	1,691	
A. & S.....	.....	113	
I. T. S.....	123	8	
	<hr/>	<hr/>	
	123	1,812	1,935
 For Delivery to T. R. R. on West Side:			
T. R. R.....	.....	228	
Merchants .....	.....	1,101	
Wiggins .....	.....	.....
		<hr/>	
		1,329	1,329
		<hr/>	
			15,451

**Statement Showing Distribution of Carload Freight Between Roads in Mill Creek Valley
and Individual Roads.**

	Brought In	Loaded Locally	Total
Mo. Pac.....	.....	4,225	
St. L.-S. F.....	.....	1,773	
Wabash (U. D.).....	.....	735	
		<hr/>	
		6,733	6,733
	For Through Movement	For Local Delivery	
C. P. & St. L.....	40	.....
C. & A.....	72	14	
C. C. C. & St. L.....	355	.....
C. B. & Q. (East).....	.....	.....
C. & E. I.....	97	.....
Wabash (East)	195	.....
	<hr/>	<hr/>	
	759	14	773
 For Delivery to Roads in Group No. 2:			
I. C. (North).....	48	12	
L. & M.....	.....	5	
T. St. L. & W.....	225	.....
St. L. T. & E.....	.....	.....
	<hr/>	<hr/>	
	273	17	290

For "Local Delivery" consists principally of cars brought in by road named for delivery on its own rails, including a small number from other roads in the same group.

Statement Showing Distribution of Carload Freight Between Roads in Mill Creek Valley and Individual Roads.

	For Through Movement	For Local Delivery	
For Delivery to Roads in Group No. 3:			
Penn.	235	10	
B. & O.	81	12	
C. B. & Q. (East)			
L. & N.	35	45	
St. L. & O'F.			
E. St. L. & Sub.			
	<hr/> 351	<hr/> 67	418
For Delivery to Roads in Group No. 4:			
Sou.	38	5	
St. L. & O. R.			
I. C. (South)	72	18	
	<hr/> 110	<hr/> 23	133
For Delivery to Roads in Group No. 5:			
Mo. Pac.	120		
St. L.-S. W.	12		
M. & O.	35	50	
	<hr/> 167	<hr/> 50	217
For Delivery to Roads in Group No. 6:			
M. K. & T.	29	11	
C. B. & Q. (West)	10	44	
Wabash (West)	562		
C. R. I. & P.	23	3	
	<hr/> 624	<hr/> 58	682
For Delivery to Roads in Group No. 7:			
Mo. Pac.	240		240
For Delivery to Roads in Group No. 8:			
Mo. Pac.	2,004		
St. L.-S. F.	1,487		
	<hr/> 3,491		3,491
For Delivery to Roads in South St. Louis:			
Mo. Pac.		18	
Manufacturers		8	
		<hr/> 26	26
For Delivery to T. R. R. on East Side:			
T. R. R.		13	
Merchants			
Wiggins			
		<hr/> 13	13
For Delivery to:			
I. T. S.	21		21
For Delivery to T. R. R. on West Side:			
T. R. R.		212	
Merchants		217	
Wiggins			
		<hr/> 429	429
			<hr/> 6,733

**Statement Showing Distribution of Carload Freight Between Roads in South St. Louis
and Individual Roads.**

	Brought In	Loaded Locally	Total
Mo. Pac.....	.....	2,225	
Manufacturers .....	.....	1,068	
	<hr/>	<hr/>	
		3,293	3,293
For Delivery to Roads in Group No. 1:	For Through Movement	For Local Delivery	
C. P. & St. L.....	95	.....
C. & A.....	15	.....
C. C. C. & St. L.....	45	.....
C. B. & Q. (East).....	4	.....
C. & E. I.....	30	.....
Wabash (East)	60	.....
	<hr/>	<hr/>	
	249		249
For Delivery to Roads in Group No. 2:			
I. C. (North).....	25	.....
L. & M.....	.....	.....
T. St. L. & W.....	20	.....
St. L. T. & E.....	.....	.....
	<hr/>	<hr/>	
	45		45
For Delivery to Roads in Group No. 3:			
Penn.	50	.....
B. & O.....	30	.....
C. B. & Q. (East).....	1	.....
L. & N.....	30	.....
St. L. & O'F.....	.....	.....
E. St. L. & Sub.....	.....	.....
	<hr/>	<hr/>	
	111		111
For Delivery to Roads in Group No. 4:			
Sou.	25	.....
St. L. & O. R.....	.....	.....
I. C. (South)	37	.....
	<hr/>	<hr/>	
	62		62
For Delivery to Roads in Group No. 5:			
Mo. Pac.....	1,332	.....
St. L.-S. W.....	34	.....
M. & O.....	43	.....
	<hr/>	<hr/>	
	1,409		1,409

**Statement Showing Distribution of Carload Freight Between Roads in South St. Louis
and Individual Roads.**

	For Through Movement	For Local Delivery	
For Delivery to Roads in Group No. 6:			
M. K. & T.....	52	.....
C. B. & Q. (West).....	126	16	
Wabash (West).....	286	145	
C. R. I. & P.....	17	1	
	<hr/> 481	<hr/> 162	643
For Delivery to Roads in Group No. 7:			
Mo. Pac.....	347	.....	347
For Delivery to Roads in Group No. 8:			
Mo. Pac.....	113	.....
St. L.-S. F.....	55	.....
	<hr/> 168	<hr/>	168
For Delivery to Roads in Mill Creek Valley:			
Mo. Pac.....	.....	42	
St. L.-S. F.....	.....	2	
Wabash (U. D. Line).....	.....	.....
	<hr/>	<hr/> 44	44
For Delivery to T. R. R. on East Side:			
T. R. R.....	.....	.....
Merchants .....	.....	.....
Wiggins .....	.....	45	
	<hr/>	<hr/> 45	45
For Delivery to:			
I. T. S.....	10	.....	10
For Delivery to T. R. R. on West Side:			
T. R. R.....	.....	.....
Merchants .....	.....	.....
Wiggins .....	.....	160	
	<hr/>	<hr/> 160	160
			<hr/> 3,293

**Statement Showing Distribution of Carload Freight Between T. R. R. A. (East Side)
and Individual Roads.**

Loaded Locally and Delivered by:

T. R. R.....	810
Merchants	4,952
Wiggins	1,410
	<hr/> 7,172

For Delivery to Roads in Group No. 1:	For Through Movement	For Local Delivery	
C. P. & St. L.....	73	2	
C. & A.....	228	9	
C. C. C. & St. L.....	391	64	
C. B. & Q. (East).....	62	18	
C. & E. I.....	72		
Wabash (East)	290	13	
	<hr/> 1,116	<hr/> 106	1,222

For Delivery to Roads in Group No. 2:

I. C. (North).....	128		
L. & M.....	4		
T. St. L. & W.....	172	4	
St. L. T. & E.....	4	1	
	<hr/> 308	<hr/> 5	313

For Delivery to Roads in Group No. 3:

Penn.	344	96	
B. & O.....	340	46	
C. B. & Q. (East).....	21	4	
L. & N.....	147	15	
St. L. & O'F.....		2	
E. St. L. & Sub.....		4	
	<hr/> 852	<hr/> 167	1,019

For Delivery to Roads in Group No. 4:

Sou.	68	38	
St. L. & O. R.....			
I. C. (South)	192	28	
	<hr/> 260	<hr/> 66	326

For Delivery to Roads in Group No. 5:

Mo. Pac.....	402	219	
St. L.-S. W.....	126	1	
M. & O.....	94	5	
	<hr/> 622	<hr/> 225	847

For Delivery to Roads in Group No. 6:

M. K. & T.....	150	115	
C. B. & Q. (West).....	68	5	
Wabash (West).....	187	45	
C. R. I. & P.....	35		
	<hr/> 440	<hr/> 165	605

**Statement Showing Distribution of Carload Freight Between T. R. R. A. (East Side)
and Individual Roads.**

	For Through Movement	For Local Delivery	
For Delivery to Roads in Group No. 7:			
Mo. Pac.....	66	-----	66
For Delivery to Roads in Group No. 8:			
Mo. Pac.....	220	-----	
St. L.-S. F.....	215	-----	
	<hr/> 435	<hr/>	435
For Delivery to Roads in Mill Creek Valley:			
Mo. Pac.....	-----	450	
St. L.-S. F.....	-----	20	
Wabash (U. D.).....	-----	-----	
	<hr/>	<hr/> 470	470
For Delivery to Roads in South St. Louis:			
Mo. Pac.....	-----	65	
Manufacturers	-----	10	
	<hr/>	<hr/> 75	75
For Delivery on T. R. R. on East Side:			
T. R. R.....	-----	15	
Merchants	-----	910	
Wiggins	-----	288	
	<hr/>	<hr/> 1,213	1,213
For Delivery to:			
Stock Yards	-----	89	
A. & S.....	-----	11	
I. T. S.....	68	7	
	<hr/> 68	<hr/> 107	175
For Delivery on T. R. R. on West Side:			
T. R. R.....	-----	31	
Merchants	-----	315	
Wiggins	-----	60	
	<hr/>	<hr/> 406	406
			<hr/> 7,172

**Statement Showing Distribution of Carload Freight Between T. R. R. A. (West Side)
and Individual Roads.**

Loaded Locally and Delivered by:

T. R. R.....	2,742
Merchants	4,105
Wiggins	2,005
	<hr/>
	8,852

For Delivery to Roads in Group No. 1:	For Through Movement	For Local Delivery	
C. P. & St. L.....	115	.....
C. & A.....	242	.....
C. C. C. & St. L.....	365	20	
C. B. & Q. (East).....	185	.....
C. & E. I.....	144	.....
Wabash (East)	602	.....
	<hr/>		
	1,653	20	1,673

For Delivery to Roads in Group No. 2:			
I. C. (North).....	334	.....
L. & M.....	.....	.....
T. St. L. & W.....	293	.....
St. L. T. & E.....	25	.....
	<hr/>		
	652		652

For Delivery to Roads in Group No. 3:			
Penn.	504	25	
B. & O.....	202	5	
C. B. & Q. (East).....	61	.....
L. & N.....	221	.....
St. L. & O'F.....	.....	.....
E. St. L. & Sub.....	.....	.....
	<hr/>		
	988	30	1,018

For Delivery to Roads in Group No. 4:			
Sou.	200	38	
St. L. & O. R.....	.....	.....
I. C. (South)	501	.....
	<hr/>		
	701	38	739

For Delivery to Roads in Group No. 5:			
Mó. Pac.....	95	.....
St. L.-S. W.....	360	15	
M. & O.....	235	.....
	<hr/>		
	690	15	705

For Delivery to Roads in Group No. 6:			
M. K. & T.....	189	8	
C. B. & Q. (West).....	12	105	
Wabash (West).....	185	115	
C. R. I. & P.....	106	6	
	<hr/>		
	492	234	726

**Statement Showing Distribution of Carload Freight Between T. R. R. A. (West Side)
and Individual Roads.**

	For Through Movement	For Local Delivery	
For Delivery to Roads in Group No. 7:			
Mo. Pac.....	106	.....	106
For Delivery to Roads in Group No. 8:			
Mo. Pac.....	180	.....
St. L.-S. F.....	245	.....
	<u>425</u>		425
For Delivery to Roads in Mill Creek Valley:			
Mo. Pac.....	.....	259	
St. L.-S. F.....	.....	59	
Wabash.....	.....	10	
		<u>328</u>	328
For Delivery to Roads in South St. Louis:			
Mo. Pac.....	.....	134	
Manufacturers .....	.....	15	
		<u>149</u>	149
For Delivery on T. R. R. on East Side:			
T. R. R.....	.....	125	
Merchants .....	.....	558	
Wiggins .....	.....	95	
		<u>778</u>	778
For Delivery to:			
Stock Yards .....	.....	65	
A. & S.....	.....	10	
I. T. S.....	.....	.....
		<u>75</u>	75
For Delivery on T. R. R. on West Side:			
T. R. R.....	.....	376	
Merchants .....	.....	552	
Wiggins .....	.....	550	
		<u>1,478</u>	1,478
			<u>8,852</u>

**Statement Showing Distribution of Carload Freight Between East St. Louis Junction, A. & S.,
I. T. S. and Individual Roads.**

	Brought In	Loaded Locally	Total
East St. Louis Jct.....	.....	5,888	
A. & S.....	.....	552	
I. T. S.....	.....	486	
	<hr/>	<hr/>	
		6,926	6,926
For Delivery to Roads in Group No. 1:	For Through Movement	For Local Delivery	
C. P. & St. L.....	31	.....
C. & A.....	619	.....
C. C. C. & St. L.....	415	.....
C. B. & Q. (East).....	154	.....
C. & E. I.....	15	.....
Wabash (East).....	128	.....
	<hr/>	<hr/>	
	1,362		1,362
For Delivery to Roads in Group No. 2:			
I. C. (North).....	233	.....
L. & M.....	1	.....
T. St. L. & W.....	499	.....
St. L. T. & E.....	8	.....
	<hr/>	<hr/>	
	741		741
For Delivery to Roads in Group No. 3:			
Penn.	641	.....
B. & O.....	753	.....
C. B. & Q. (East).....	50	.....
L. & N.....	651	.....
St. L. & O'F.....	.....	41	
E. St. L. & Sub.....	.....	2	
	<hr/>	<hr/>	
	2,095	43	2,138
For Delivery to Roads in Group No. 4:			
Sou.	364	22	
St. L. & O. R.....	.....	.....
I. C. (South).....	349	.....
	<hr/>	<hr/>	
	713	22	735
For Delivery to Roads in Group No. 5:			
Mo. Pac.....	40	.....
St. L.-S. W.....	34	.....
M. & O.....	341	.....
	<hr/>	<hr/>	
	415		415
For Delivery to Roads in Group No. 6:			
M. K. & T.....	21	.....
C. B. & Q. (West).....	.....	6	
Wabash (West).....	69	20	
C. R. I. & P.....	32	1	
	<hr/>	<hr/>	
	122	27	149

	For Through Movement	For Local Delivery	
For Delivery to Roads in Group No. 8:			
Mo. Pac.....	739	.....
St. L.-S. F.....	97	.....
	<hr/> 836	<hr/>	836
For Delivery to Roads in Mill Creek Valley:			
Mo. Pac.....	.....	17	
St. L.-S. F.....	.....	25	
	<hr/>	<hr/> 42	42
For Delivery to Roads in South St. Louis:			
Mo. Pac.....	.....	15	
Manufacturers .....	.....	1	
	<hr/>	<hr/> 16	16
For Delivery to T. R. R. on East Side:			
T. R. R.....	.....	.....
Merchants .....	.....	77	
Wiggins.....	.....	.....
	<hr/>	<hr/> 77	77
For Delivery to:			
Stock Yards.....	.....	5	
I. T. S.....	.....	172	
	<hr/>	<hr/> 177	177
For Delivery to T. R. R. on West Side:			
T. R. R.....	.....	32	
Merchants.....	.....	105	
Wiggins.....	.....	101	
	<hr/>	<hr/> 238	238
			<hr/> 6.926

For "Local Delivery" consists principally of cars brought in by road named for delivery on its own rails, including a small number from other roads in the same group.

APPENDIX "H"—MEMORANDA REFERENCE ST. LOUIS MUNICIPAL BRIDGE

Location and Description of St. Louis Municipal Bridge

The St. Louis Municipal Bridge is a double-deck structure built at a cost of \$6,250,000. The upper deck is for pedestrians, vehicles and street cars; the lower deck for steam trains. The bridge is of modern design and construction. The railroad deck is designed for E-60 loading, has double track 100-pound rails, and will carry the heaviest engines. No signals have been provided to date. Making allowance for necessary connections, interlocking, signalling, etc., an additional expense of about \$250,000 will be necessary, making the total cost, ready for service, \$6,500,000, and the annual fixed charge at 6 per cent for interest and sinking fund for renewal will be about \$390,000, about one-third applicable to highway and two-thirds to railroad.

The total length of the bridge and railroad approaches is 18,330 feet, about three and one-half miles.

The western railroad approach is 3,000 feet long; maximum grade approximately 1.4 per cent. It reaches the ground just west of Seventh Street, St. Louis, immediately adjacent to and practically level with the tracks of the St. Louis Merchants Bridge Terminal Railway Co. at that point. A connection between the bridge tracks and the Terminal tracks at this point has been completed and direct access can be had between the tracks of the Municipal Bridge and the Terminal elevated tracks leading to the Union Station, and the Mill Creek Valley south of the Union Station.

The main bridge consists of three spans having a total length of 2,000 feet.

The eastern railroad approach is 13,330 feet long, maximum grade 1 per cent. It comes to the ground at 29th Street, just outside of East St. Louis, between the Southern Railway on the

north and the Illinois Central on the south, the east approach extending on a steel structure over all railroad tracks and other property from the river to an overhead crossing of the Illinois Transfer Railway, the East St. Louis outer belt of the Terminal, east of which it descends to the ground at 29th Street.

Immediately at the west end of the main spans, arrangements have been made in the steel work to permit lateral connections to lead off to the north and to the south along the St. Louis river front. About 900 feet east of the east end of the main spans arrangements have been made in the steel work to permit a lateral approach to lead off to the north in the direction of Relay Depot, and a few hundred feet east arrangements have been made in the steel work to permit a lateral connection to the south, practically along the line and south of the Illinois Central. Arrangement has also been made in the steel work near the outer belt of the Terminal to permit wye connections with the Terminal Belt tracks from the north and from the south. No land has been condemned, nor secured, nor have any other arrangements been made for these additional connections.

At the extreme east end, 3,300 feet east of the Terminal outer belt, the double track main line of the Alton and Southern Railroad, which follows along parallel with and immediately south of the east end of the bridge approach, makes an offset across the line of the bridge tracks, and then continues easterly, northerly of the main line of the bridge tracks, so that if the bridge tracks be extended beyond 29th Street, a grade crossing of the Alton and Southern must be made. A connection has been made between the Alton and Southern and the end of the bridge tracks. All of the land in line with the bridge tracks, east of 29th Street, and both land and tracks north and south of the bridge approach

east of the Terminal Belt tracks, are owned by the Alton and Southern Railroad; the east end of the bridge approach runs into Alton and Southern property and stops between its tracks, as between the prongs of a fork. The Alton and Southern Railroad stub tracks on the north side of the bridge approach are used for yard tracks.

The following pages contain pertinent legal and corporate information having reference to the bridge:

Legal and Corporate Information

The City of St. Louis was authorized and empowered by the Missouri State Legislature in 1905 to build or acquire by purchase, lease, gift, or otherwise, within or without the limits of St. Louis, bridges or tunnels over or under streams within the State or on the boundaries.

(Laws of Missouri, 1905, page 94, approved April 6, 1905. See Exhibit I.)

The charter of the City of St. Louis in 1905 provided that the City could purchase, receive and hold property, real or personal, within said City and beyond the limits, to be used for the establishment of a hospital, poorhouse, house of correction, etc., or for any other purpose. (Article 1, Section 1, Old City Charter.) (Exhibit II.) The courts have held that this Section of the City Charter gives the City ample authority to build and maintain a bridge across the Mississippi River. (*Haeusseler vs. St. Louis*, 205 Mo. 656.)

The present City Charter adopted in 1915 grants more extensive authority to the City of St. Louis as to acquiring, constructing, owning and operating public utilities or any other utility or property within or without the City. (Article 1, Sec. 1, New City Charter.) (Exhibit III.)

Ordinance No. 22366 of the City of St. Louis, approved April 3, 1906, authorized the holding of an election June 12, 1906, to vote with other items on the proposition to issue bonds in the amount of \$3,500,000 "for the construction and maintenance of a Municipal Bridge for public use by railroads, street cars, vehicles of all kinds and pedestrians over and across the Mississippi River, and for the purchase of lands to be used for approaches thereto."

Section 4 of that ordinance provided that the proceeds from the sale of the amount of bonds authorized by an affirmative vote of the people, under Proposition No. 1, shall be used "for the construction and maintenance of a municipal bridge for public use by railroads, street cars, vehicles of all kinds and pedestrians over and across the Mississippi River and located within the corporate limits of said City of St. Louis, and the State of Illinois, and for the purchase of all lands to be used for approaches in connection therewith, and which said bridge shall be at all times and forever remain a free bridge; provided, however, the City reserves the right to grant franchises for the use of such bridge for public service purposes upon such terms and compensation as may be prescribed by ordinance; and, provided, further, that no such franchise shall confer an exclusive right in respect to such public purposes upon the grantee thereof."

The term "Free Bridge" has not yet been legally defined.

Other items included in the ordinance for public improvements made the aggregate amount of bonds under this ordinance \$11,200,000. The ordinance was carried June 12, 1906, 51,988 voting for, and 6,491 voting against the appropriations.

June 25, 1906, the following Act of Congress was passed authorizing the City of St. Louis to build a bridge across the Mississippi River. (U. S. Statutes at Large, 59th Congress, 1905-1907, Chap. 3539, page 467):

"Chap. 3539.—An Act to authorize the City of Saint Louis, a corporation organized under the laws of the State of Missouri, to construct a bridge across the Mississippi River. *Be it Enacted by the Senate and House of Representatives of the United States of America in Congress Assembled*, That the City of Saint Louis, a corporation organized under the laws of the State of Missouri, be, and is hereby, authorized to construct, maintain, and operate a railroad, wagon and foot passenger bridge, and approaches thereto, across the Mississippi River at Saint Louis, Missouri, in accordance with the provisions of the Act entitled 'An Act to regulate the

construction of bridges over navigable waters,' approved March 23d, 1906."

The Act of Congress of March 23, 1906, is usually referred to as the "General Bridge Act," entitled "An Act to regulate the construction of bridges over navigable waters." (U. S. Statutes at Large, 59th Congress, 1905-1907, Chap. 1130.) (Exhibit IV.)

This Act provides in Section 3, "That all railroad companies desiring the use of any railroad bridge built in accordance with the provisions of this Act shall be entitled to equal rights and privileges relative to the passage of railway trains or cars over the same and over the approaches thereto upon payment of a reasonable compensation for such use; and in case of any disagreement between the parties in regard to the terms of such use or the sums to be paid, all matters at issue shall be determined by the Secretary of War, upon hearing the allegations and proofs submitted to him."

The Act also provides in Section 4 as follows: "If tolls shall be charged for the transit over any bridge constructed under the provisions of this Act, of engines, cars, street cars, wagons, carriages, vehicles, animals, foot passengers, or other passengers, such tolls shall be reasonable and just, and the Secretary of War may, at any time, and from time to time, prescribe the reasonable rates of toll for such transit over such bridge, and the rates so prescribed shall be the legal rates and shall be the rates demanded and received for such transit."

Ordinance of the City of St. Louis No. 22674, approved November 26, 1906, declared the result of the bond election, and directed the issue of bonds in the sum of \$11,200,000, the principal of the bonds to be payable 20 years from their date. The bonds are in denomination of \$1,000, No. 1 to No. 11,200, and the bridge bonds constitute Nos. 1 to 3,500, both inclusive. The ordinance provided that an annual tax shall be levied, sufficient to provide for the interest and also for a sinking fund to meet the principal, and pledged the faith of the City of St. Louis for the punctual payment of the interest. (See Ordinance No. 22674.) (Exhibit V.)

These bonds were issued, the interest is being

paid and the City is setting aside 5 per cent per annum to retire the principal in twenty years. Total annual cost, \$315,000.

February 8th, 1907, January 23rd, 1908, January 9th, 1909, January 7th, 1910, February 17th, 1913, February 15th, 1915, February 11th, 1918, and February 10th, 1921, Acts of Congress were passed extending the time for the construction of the bridge, if actual construction be completed within three years from the approval of each Act.

July 21, 1907, the Supreme Court of Missouri, en banc held that the ordinance authorizing the building of the Municipal Bridge and the issuance of bonds is legal. (*Haeussler v. City of St. Louis*, 205 Missouri 656.)

The City, by Ordinance No. 23315, passed over the Mayor's veto November 22, 1907, established the location of the bridge at or near Chouteau Ave., where it has been built. (Exhibit VI.)

Ordinance No. 23330, approved December 18, 1907, authorized and directed the Board of Public Improvements to prepare plans and specifications for the Municipal Free Bridge, and to procure the approval of the Government. The bridge plans were approved by the War Department, December 17, 1908. A slight change in location was approved by the War Department, May 20, 1909.

January 22, 1909, the appointment of Boller and Hodge, of New York, as Consulting Engineers for the bridge was approved by the Mayor and contract was entered into with that firm March 4, 1909.

Ordinance No. 24456, approved June 23, 1909, and numerous subsequent ordinances authorized the condemnation of lands and construction of the bridge.

July 28, 1909, contract for the construction of the four piers for the three channel spans was awarded to the Missouri Valley Bridge and Iron Co., of Leavenworth, Kansas. Final total cost \$468,924.

November 16, 1909, contract for the construction and erection of the three channel spans (aggregate length 2,000 feet) was awarded to the American Bridge Co., in the amount of \$1,394,043.

Ordinance No. 25362, approved July 11, 1910, and several subsequent ordinances, appropriated nearly one million dollars for right-of-way for the bridge and approaches.

Ordinance No. 25947, approved July 10, 1911, appropriated \$70,000 for foundations and retaining walls in the west approach. Contract was awarded August 16, 1911, to the Missouri Valley Bridge and Iron Co., for \$52,097.

Ordinance No. 25948, approved July 10, 1911, appropriated \$480,000 for a portion of the steel for the west steel approach, and contract was awarded to the American Bridge Co., August 16, 1911, in the amount of \$427,297.

Ordinance No. 25979, approved July 17, 1911, authorized and fixed the location of the railroad west approach of the bridge from a point in the west line of Broadway where it diverges from the west highway approach along the center line of Gratiot Street to the east line of 23rd Street. (Exhibit VII.)

Ordinance No. 26635, approved August 3, 1912, appropriated \$25,000 for foundations for extending the west railroad approach from Broadway to Seventh Street, and contract for this work was awarded Fruin-Colnon Contracting Co., September 3, 1912, for \$20,614.

Ordinance No. 26636, approved August 3, 1912, appropriated \$55,000 for the steel in the west railroad approach from Broadway to Seventh Street, and contract for this work was awarded to the American Bridge Co., September 3, 1912, for \$50,227.

From the beginning it was predicted by many that the amount of \$3,500,000 would not build the bridge and the approaches, and that further appropriations would be required. After two previous elections had been held and the issue of bonds for the completion of the bridge disapproved, Ordinance No. 26672 was approved May 15, 1914, authorizing the issue of \$2,750,000 in bonds for the construction of the eastern approaches. The election was held November 6, 1914, 88,767 voting for, and 13,151 against.

Ordinance No. 27762, approved December 22, 1914, appropriated \$100,000 for the foundations of a portion of the east approach.

Ordinance No. 27796, approved December 29, 1914, declared the election for the bond issue of \$2,750,000 carried, and prescribed the form of $4\frac{1}{2}$ per cent bonds to be issued for a period of twenty years, and an annual tax sufficient to pay the interest on the bonds, and a sinking fund to meet the principal at maturity.

These bonds were issued, and the City is paying the interest and setting aside 5 per cent per annum to retire the principal in 20 years. Total annual cost \$261,250.

Ordinance No. 28060, approved April 16, 1915, appropriated \$1,000,000 for steel in the east approaches.

Ordinance No. 28061, approved April 16, 1915, appropriated \$360,000 for a portion of the foundations and retaining walls of the east approach. Ordinance No. 28377, approved December 3, 1915, authorized the expenditure of \$630,000 for foundations and retaining walls for a portion of the east approach.

Other appropriations and expenditures brought the total cost up to the full amount of \$6,250,000. The total annual interest and sinking fund is about \$576,250, for twenty years, after which this annual expense to the City will stop.

The highway floor was opened for traffic in the spring of 1917. The railroad deck is complete with double track 100-pound rails and is connected with the Terminal at St. Louis and with the Alton and Southern at East St. Louis. It is not in use for railroad trains.

Ordinance No. 29501, approved February 21, 1917, prescribed the terms and regulations under which the railroads, etc., may use the Municipal Bridge. This ordinance places the control of the bridge in a Commission, consisting of the Mayor, the President of the Board of Aldermen, the Comptroller, the Director of Street and Sewers, and the Director of Public Utilities; provides that any common carrier may use the bridge upon the issuance of a permit under the terms and regulations of the ordinance; provides for indemnity bonds for \$25,000 to \$100,000; requires that rates from any point outside the cities of St. Louis and East St. Louis, defined as the "St. Louis traffic zone," shall be the same to all points within that zone; provides that any road using the bridge shall grant the use of its

tracks for through movements in St. Louis and East St. Louis and two miles beyond to other lines that may use the bridge, upon a wheelage basis, rental charges for such use of tracks to be determined by arbitration in event of disagreement; provides that compensation for use of bridge shall hereafter be prescribed by ordinance. (Exhibit VIII.)

Exhibit I.

"Cities of One Hundred Thousand Inhabitants or Over—Power to Build or Acquire Bridges and Tunnels.

An Act authorizing and empowering cities of one hundred thousand inhabitants and over to build or acquire by purchase, lease, gift, or otherwise, within or without the limits of said city, a bridge or bridges or a tunnel or tunnels for public use by railroads, street cars, vehicles of all kinds and pedestrians, over or under rivers and streams within this State or forming a boundary between this and other States; and to acquire, hold, use and retain by purchase, lease, gift, or otherwise, land to be used as approaches for and in the construction, use and operation of said bridge or bridges, tunnel or tunnels in this and other States, and to operate, use and maintain said bridge or bridges, tunnel or tunnels either as toll or free bridges or tunnels.

Section 1.—Power to build or acquire bridges and tunnels, and maintain approaches to same.

Be it enacted by the General Assembly of the State of Missouri, as follows:

Section 1.—All cities in this State having one hundred thousand inhabitants or over are hereby given the power and authority to build or acquire by purchase, lease, gift, or otherwise, within their corporate limits or within a reasonable distance outside thereof, a bridge or bridges, or a tunnel or tunnels for public use by railroads, street cars, vehicles of all kinds and pedestrians, over or under rivers and streams in Missouri or those forming a boundary between this and other States, and to acquire, hold, use and retain by purchase, lease, gift, or otherwise, land to be used for approaches for and in the construction, operation and maintenance of said bridge or bridges, tunnel or tunnels, in this and other States, and to maintain, use and operate said

bridge or bridges, tunnel or tunnels, either as toll or free bridges or tunnels, as may by said cities be deemed expedient."

(Laws of Missouri, 1905, page 94, approved April 6, 1905.)

Exhibit II.

Article I.

Section 1.—*Corporate Name and Powers—Authority to Purchase, Hold and Dispose of Property—to Receive Bequests, Etc., and Have a Common Seal.*—The inhabitants of all that district of country embraced within the limits prescribed in the next succeeding section, shall be and continue a body corporate by the name and style of "The City of St. Louis," and by that name shall have perpetual succession, shall sue and be sued, implead and be impleaded, defend and be defended in all courts of law and equity, and in all actions whatsoever; may purchase, receive and hold property, real or personal, within said City, and beyond the limits of the city, to be used for the burial of the dead of the city, for the erection of waterworks to supply the city with water, for the establishment and erection of gasworks to supply the city with light, for the establishment of a hospital or hospitals for the reception of persons infected with contagious or other diseases, for a poorhouse or poorhouses, workhouse, house of correction, or for any other purposes; may sell, lease, or otherwise dispose of any property for the benefit of the City; may receive bequests, gifts and donations, of all kinds of property, within or without the city, in fee simple or in trust, for charitable or other purposes, and do all acts necessary to carry out the purposes of such bequests, gifts and donations, with power to manage, sell, lease or otherwise dispose of the same; and may have and use a common seal, and may break, change or alter the same at pleasure.

(Old Charter of City of St. Louis, 1905.)

Exhibit III.

Article I.

Corporate Name and Powers—Wards.

Section 1.—The inhabitants of the City of St. Louis, as its limits now are or may hereafter be, shall be and continue a body corporate by name "The City of St. Louis," and as such shall have

perpetual succession, may have a corporate seal, and sue and be sued. It shall have power:

(1). To assess, levy and collect taxes for all general and special purposes on all subjects or objects of taxation.

(2). To adopt such classifications of the subjects and objects of taxation as may not be contrary to law.

(3). To make special assessments for local improvements.

(4). To contract and be contracted with.

(5). To incur debts by borrowing money or otherwise, and to give any appropriate evidence thereof.

(6). To issue and give, sell, pledge or in any manner dispose of, negotiable or non-negotiable, interest-bearing or non-interest-bearing bonds or notes of the city, upon the credit of the city, or solely upon the credit of specific property owned by the city, or solely upon the credit of income derived from and property used in connection with any public utility owned or operated by the city, or solely upon the credit of the proceeds of special assessments for local improvements, or upon any two or more of such credits.

(7). To expend the money of the city for all lawful purposes.

(8). To acquire or receive and hold, maintain, improve, sell, lease, mortgage, pledge or otherwise dispose of property, real or personal, and any estate or interest therein, within or without the city or State.

(9). To condemn private property, real or personal, or any easement or use therein for public use within or without the city or State.

(10). To take and hold property within or without the City or State upon trust; and to administer trusts.

(11). To acquire, construct, own, operate and maintain or sell, lease, mortgage, pledge or otherwise dispose of public utilities or any estate or interest therein, or any other utility of service to the city, its inhabitants or any part thereof.

(12). To grant franchises for public utilities.

(13). To regulate the construction, maintenance, equipment, operation, service, rates and charges of public utilities, and compel, from time to time, reasonable extensions of facilities for such service.

(14). To establish, open, re-locate, vacate, alter, widen, extend, grade, improve, repair, construct, reconstruct, maintain, light, sprinkle and clean public highways, streets, boulevards, parkways, sidewalks, alleys, parks, public grounds and squares, wharves, bridges, viaducts, subways, tunnels, sewers and drains and regulate the use thereof.

(15). To acquire, provide for, construct, regulate and maintain and do all things relating to all kinds of public buildings, structures, markets, places, works and improvements.

(16). To provide and maintain a harbor and wharves and regulate the use thereof, and impose wharfage and other charges therefor; license and regulate ferries and other boats; grant ferry privileges and regulate ferry charges; rent or lease for not exceeding twenty-five years, portions of the wharf for any purpose tending to facilitate the trade of the city.

(17). To improve water courses and regulate the use thereof.

(18). To establish, impose and enforce water rates and rates and charges for public utilities or other service, products or conveniences operated, rendered or furnished by the city.

(19). To provide and maintain a sanitary system.

(20). To provide and maintain a fire department.

(21). To provide and maintain police and excise departments when permitted by law.

(22). To collect and dispose of sewage, offal, ashes, garbage, and refuse, or to license and regulate such collection and disposal.

(23). To license and regulate all persons, firms, corporations, companies and associations engaged in any business, occupation, calling, profession or trade.

(24). To impose a license tax upon any business, vocation, pursuit, calling, animal or thing.

(25). To define and prohibit, abate, suppress and prevent or license and regulate, all acts, practices, conduct, business, occupations, callings, trades, uses of property, and all other things whatsoever detrimental or liable to be detrimental to the health, morals, comport, safety, convenience or welfare of the inhabitants of the city, and all nuisances and causes thereof.

(26). To prescribe limits within which business, occupations and practices liable to be nuisances or detrimental to the health, morals, security or general welfare of the people may lawfully be established, conducted or maintained.

(27). To inspect, test, measure and weigh any article of consumption or use within the city.

(28). To establish, regulate, license and inspect weights and measures.

(29). To regulate the construction and materials of all buildings and structures; and to inspect all buildings, lands and places as to their condition for health, cleanliness and safety, and when necessary prevent the use thereof and require any alterations or changes necessary to make them healthful, clean or safe.

(30). To abolish or prevent grade crossings and provide for safe crossings and compel any street, steam, electric railroad or other transportation company or companies affected thereby to pay all or a part of the cost thereof.

(31). To provide for the support, maintenance and care of children and sick, aged or insane, poor persons and paupers.

(32). To provide and maintain charitable, educational, recreative, curative, corrective, dententive or penal institutions, departments, functions, facilities, instrumentalities, conveniences and services.

(33). To do all things whatsoever expedient for promoting or maintaining the comfort, education, morals, peace, government, health, welfare, trade, commerce or manufactures of the city or its inhabitants.

(34). To enforce any ordinance, rule or regulation by means of fines, forfeitures, penalties and imprisonment or by action or proceeding in its own courts or in any other court of competent jurisdiction or by any one or more of such means, and to impose costs as a part thereof.

(35). To exercise all powers granted or not prohibited to it by law or which it would be competent for this charter to enumerate.

(Charter of City of St. Louis, 1915.)

Exhibit IV.

Chap. 1130.—An Act to Regulate the Construction of Bridges over navigable waters.

Be It Enacted by the Senate and House of

Representatives of the United States of America in Congress Assembled, That when, hereafter, authority is granted by Congress to any persons to construct and maintain a bridge across or over any of the navigable waters of the United States, such bridge shall not be built or commenced until the plans and specifications for its construction, together with such drawings of the proposed construction and such map of the proposed location as may be required for a full understanding of the subject, have been submitted to the Secretary of War and Chief of Engineers for their approval, nor until they shall have approved such plans and specifications and the location of such bridge and accessory works; and when the plans for any bridge to be constructed under the provisions of this Act have been approved by the Chief of Engineers and by the Secretary of War, it shall not be lawful to deviate from such plans, either before or after completion of the structure, unless the modification of such plans has previously been submitted to and received the approval of the Chief of Engineers and of the Secretary of War.

Section 2. That any bridge built in accordance with the provisions of this Act shall be a lawful structure and shall be recognized and known as a post route, upon which no higher charge shall be made for the transmission over the same of the mails, the troops, and the munitions of war of the United States than the rate per mile paid for the transportation over any railroad, street railway, or public highway leading to said bridge; and the United States shall have the right to construct, maintain and repair, without any charge therefor, telegraph and telephone lines across and upon said bridge and its approaches; and equal privileges in the use of said bridge and its approaches shall be granted to all telegraph and telephone companies.

Section 3. That all railroad companies desiring the use of any railroad bridge built in accordance with provisions of this Act shall be entitled to equal rights and privileges relative to the passage of railway trains or cars over the same and over the approaches thereto upon payment of a reasonable compensation for such use; and in case of any disagreement between the parties in regard to the terms of such use or the sums

to be paid all matters at issue shall be determined by the Secretary of War upon hearing the allegations and proofs submitted to him.

Section 4. That no bridge erected or maintained under the provisions of this Act shall at any time unreasonably obstruct the free navigation of the waters over which it is constructed, and if any bridge erected in accordance with the provisions of this Act shall, in the opinion of the Secretary of War, at any time unreasonably obstruct such navigation, either on account of insufficient height, width of span, or otherwise, or if there be difficulty in passing the draw opening or the draw-span of such bridge by rafts, steamboats, or other water craft, it shall be the duty of the Secretary of War, after giving the parties interested reasonable opportunity to be heard, to notify the persons owning or controlling such bridge to so alter the same as to render navigation through or under it reasonably free, easy, and unobstructed, stating in such notice the changes required to be made, and prescribing in each case a reasonable time in which to make such changes, and if at the end of the time so specified the changes so required have not been made, the persons owning or controlling such bridge shall be deemed guilty of a violation of this Act; and all such alterations shall be made and all such obstructions shall be removed at the expense of the persons owning or operating said bridge. The persons owning or operating any such bridge shall maintain, at their own expense, such lights and other signals thereon as the Secretary of Commerce and Labor shall prescribe. If the bridge shall be constructed with a draw, then the draw shall be opened promptly by the persons owning or operating such bridge upon reasonable signal for the passage of boats and other water craft. If tolls shall be charged for the transit over any bridge constructed under the provisions of this Act, of engines, cars, street cars, wagons, carriages, vehicles, animals, foot passengers, or other passengers, such tolls shall be reasonable and just, and the Secretary of War may, at any time, and from time to time, prescribe the reasonable rates of toll for such transit over such bridge, and the rates so prescribed shall be the legal rates and shall be the rates demanded and received for such transit.

Section 5. That any persons who shall fail or refuse to comply with the lawful order of the Secretary of War or the Chief of Engineers, made in accordance with the provisions of this Act, shall be deemed guilty of a violation of this Act, and any persons who shall be guilty of a violation of this Act shall be deemed guilty of a misdemeanor and on conviction thereof shall be punished in any court of competent jurisdiction by a fine not exceeding five thousand dollars, and every month such persons shall remain in default shall be deemed a new offense and subject such persons to additional penalties therefor; and in addition to the penalties above described the Secretary of War and the Chief of Engineers may, upon refusal of the persons owning or controlling any such bridge and accessory works to comply with any lawful order issued by the Secretary of War or Chief of Engineers in regard thereto, cause the removal of such bridge and accessory works at the expense of the persons owning or controlling such bridge, and suit for such expense may be brought in the name of the United States against such persons, and recovery had for such expense in any court of competent jurisdiction; and the removal of any structures erected or maintained in violation of the provisions of this Act or the order or direction of the Secretary of War or Chief of Engineers made in pursuance thereof may be enforced by injunction, mandamus, or other summary process, upon application to the Circuit Court in the district in which such structure may, in whole or in part, exist, and proper proceedings to this end may be instituted under the direction of the Attorney-General of the United States at the request of the Secretary of War; and in case of any litigation arising from any obstruction or alleged obstruction to navigation created by the construction of any bridge under this Act, the cause or question arising may be tried before the Circuit Court of the United States in any district which any portion said obstruction or bridge touches.

Section 6. That whenever Congress shall hereafter by law authorize the construction of any bridge over or across any of the navigable waters of the United States, and no time for the commencement and completion of such bridge is named in said Act, the authority thereby granted

shall cease and be null and void unless the actual construction of the bridge authorized in such Act be commenced within one year and completed within three years from the date of the passage of such Act.

Section 7. That the word "persons" as used in this Act shall be construed to import both the singular and plural as, the case demands, and shall include municipalities, quasi municipal corporations, corporations, companies, and associations.

Section 8. That the right to alter, amend, or repeal this Act is hereby expressly reserved as to any and all bridges which may be built in accordance with the provisions of this Act, and the United States shall incur no liability for the alteration, amendment, or repeal thereof to the owner or owners or any other persons interested in any bridge which shall have been constructed in accordance with its provisions.

Approved, March 23, 1906.

Exhibit V.

"ORDINANCE NO. 22674.

An ordinance declaring the result of the special election called by ordinance number twenty-two thousand three hundred and sixty-six, held on June twelfth, nineteen hundred and six, and directing the issue of bonds of the City of St. Louis in the sum of eleven million two hundred thousand dollars, as authorized by the vote of said election.

Be it ordained by the Municipal Assembly of the City of St. Louis, as follows:

Section 1. It is hereby declared by the Municipal Assembly of the City of St. Louis that the result of the special election duly called and held on June twelfth, nineteen hundred and six, pursuant to the call of ordinance number twenty-two thousand three hundred and sixty-six, was the assent duly and lawfully given of more than two-thirds of the qualified voters of the City of St. Louis voting at said election to each of the nine separate propositions for increasing the bonded debt of the City of St. Louis, as set forth in said ordinance, aggregating eleven million two hundred thousand dollars.

Section 2. The Mayor and Comptroller are hereby authorized and directed to issue eleven

thousand two hundred bonds of the City of St. Louis in the denomination of one thousand dollars each, in accordance with the provisions of this ordinance. Said bonds and the coupons attached thereto shall be made payable to the bearer in United States gold coin in the City of New York, or if he so elects, in the City of London, England, in pounds sterling, at the rate of four dollars eighty-six cents six and one-half mills, and at such place therein as the Mayor and Comptroller may determine. Said bonds shall bear some convenient date or dates to be determined by the Mayor and Comptroller from time to time, as installments of bonds are issued. The par value of each bond shall bear interest at the rate of per centum per annum, payable semi-annually, and said interest shall be represented by semi-annual coupons attached to said bonds. The principal of said bonds shall be payable twenty years from their date and both principal and interest shall be payable in gold coin of the United States of the present standard of weight and fineness, or in pounds sterling in London, as above provided.

Section 3. Said bonds shall be engraved and shall be signed by the Mayor, Comptroller and Treasurer of the City of St. Louis who are in office at the date of the delivery of said bonds, and attested by the Register with the seal of the City of St. Louis thereto affixed, and shall in all respects be numbered and registered as other city bonds. The name of the City Treasurer who is such officer at the date of said bonds may be engraved on the coupons and no change in the person holding the office of City Treasurer shall make it necessary to change the name of the City Treasurer which is thus engraved on the coupons. Said bonds shall contain a provision that they may, at the option of the holder, be exchangeable for registered bonds. Said bonds shall be in substantially the following form: (*Form of bonds.*) *St. Louis Public Building and Public Improvement Bonds, City of St. Louis, United States of America, State of Missouri. One Thousand Dollars—Number—City of St. Louis—Number—One Thousand Dollars—Know All Men by Presents, That the City of St. Louis, in the State of Missouri, for value received, acknowledges itself indebted and promises to pay to James Y.*

Player, Comptroller of said city or bearer—Nineteen Hundred and Twenty, the sum of one thousand dollars, with interest thereon at the rate per centum per annum, payable semi-annually, on presentation and surrender of the proper interest coupons hereto attached as they respectively become due, both principal and interest being payable in gold coin of the United States of America of the present standard weight and fineness, at the National Bank of Commerce, in the City and State of New York, or at the option of the holder at the office of the National Bank of Scotland, Limited, Thirty-seven, Nicolas Land, London, England, in sterling of the present standard weight and fineness, at the rate of four dollars eighty-six cents six and one-half mills per pound sterling. This bond is issued under and pursuant to the Constitution of the State of Missouri, including among others, sections twelve of article ten of the said Constitution, as amended by an amendment duly adopted by vote of the qualified voters of said State at an election held November fourth, Nineteen hundred and two, and duly proclaimed by the Governor, at which election a majority of the votes cast within the said State voting for and against said amendment was in favor of its adoption, and is also issued under and pursuant to the laws of the State of Missouri, including among others Section Twenty-six of Article Three of the Charter of said City of St. Louis, and Article Thirteen, Chapter Ninety-one, Revised Statutes of Missouri of Eighteen Hundred and Ninety-nine, and amendments thereto, and ordinances of said City, Number Twenty-two Thousand Three Hundred and Sixty-six, approved April third, Nineteen Hundred and Six, and number approved Nineteen Hundred and and assent thereto duly given of more than two-thirds of the qualified voters of said city voting at the special election held on the twelfth day of June, Nineteen Hundred and Six, as called by said ordinance, and other proceedings of the corporate authorities of said city duly had and adopted. It is hereby certified, recited and declared that all acts, conditions and things required to be done, happen and be performed precedent to and in the issuance of this bond have been done, happened and been performed

in regular and due form and manner as required by law, and that this bond, together with all the other indebtedness of said city, does not exceed any limitation prescribed by the Constitution or Statutes of said State or Charter of the city, and that due provisions have been made for the collection of an annual tax sufficient to pay the interest on this bond as it falls due, and also to constitute a sinking fund for payment of the principal thereof at maturity and, that the faith and credit of said city are inviolably pledged for the punctual payment of the principal and interest of this bond. This bond is exchangeable for a registered bond for a like amount, or is exchangeable, with other bonds of this issue, for registered bonds in multiples of one thousand dollars. In witness whereof, this bond is signed by the Mayor, Comptroller and Treasurer of said City of St. Louis, and attested by the Register of said city, and the corporate seal of said city attached, and this bond is dated Nineteen Hundred and Mayor Comptroller City Treasurer

Attest: City Register. Registered Bond Book Number, Page (*Form of Coupon*), *St. Louis Public Buildings and Public Improvement Bonds. Number* \$..... The City of St. Louis, Missouri, will pay to the bearer dollars at the National Bank of Commerce in the City and State of New York, in gold coin of the United States of America of the present standard weight and fineness, or at the option of the holder at the office of the National Bank of Scotland, Limited, London, England, in sterling of the present standard and weight and fineness, at the rate of four dollars eighty-six cents six and one-half mills per pound sterling, on the first day of, Nineteen Hundred, being six months' interest then due on Public Buildings and Public Improvement Bond of said City, dated Nineteen Hundred and, Number City Treasurer. The rate of interest per annum which the said bonds shall bear shall be such rate not exceeding four per centum per annum as the Mayor and Comptroller shall determine and cause to be inserted in the said bonds, and the

blank in the above form of coupon as to the amount of such coupon shall be filled accordingly.

Section 4. The Mayor and Comptroller shall sell said bonds for the best obtainable price, either at public or private sale, as they may deem most expedient. The Comptroller of the City of St. Louis shall deliver said bonds to the purchaser thereof on receipt of the purchase money or certified check therefor, payable to the order of the City of St. Louis, and the proceeds of the sale of said bonds shall be paid by the Comptroller into the City Treasury; but no bonds shall be sold for less than par, plus the interest accrued to date of delivery thereof on the unmatured coupon first to become due and attached thereto. Said bonds may be sold at such times and in such amounts as the Mayor and Comptroller may find expedient or necessary to meet the needs or obligations of the city in connection with the respective purposes for which said bonds are issued. The purchaser of the bonds shall not be bound to see to the application of the purchase price of the bonds. All bonds sold, with a stipulation providing for delivery at a date subsequent to the date on the bonds shall, prior to delivery, have all matured coupons removed therefrom and canceled.

Section 5. Said bonds shall have engraved thereon the words "Saint Louis Public Building and Public Improvement Bonds" and shall be numbered consecutively from one to eleven thousand two hundred, both inclusive. The bonds and the proceeds from the sale of the respective bonds shall be used exclusively for the following separate purposes, to-wit: One: Bonds numbered from one to thirty-five hundred, both inclusive, (three million five hundred thousand dollars), and the proceeds from the sale thereof, shall be used for the construction and maintenance of a Municipal Bridge for public use by railroads, street cars, vehicles of all kinds and pedestrians over and across the Mississippi River, and for the purchase of land to be used for approaches thereto. Two: Bonds numbered from thirty-five hundred and one to forty-three hundred, both inclusive, (eight hundred thousand dollars) and the proceeds from the sale thereof, shall be used for the construction, reconstruction

and extension of hospitals and the purchase of sites for the same. Three: Bonds numbered from forty-three hundred and one to fifty-three hundred, both inclusive, (one million dollars) and the proceeds from the sale thereof, shall be used for the construction, reconstruction and extension of and additions to the Insane Asylum, and for the purchase of sites for the same. Four: Bonds numbered from fifty-three hundred and one to fifty-five hundred and thirty, both inclusive, (two hundred and thirty thousand dollars) and the proceeds from the sale thereof, shall be used for the construction, reconstruction and extension of buildings for the Fire Department and the purchase of sites for said buildings. Five: Bonds numbered from fifty-five hundred and thirty-one to seventy-five hundred and thirty, both inclusive, (two million dollars) and the proceeds from the sale thereof, shall be used for the construction, reconstruction and extension of a building or buildings for jails, civil, criminal and other courts, police headquarters, health department headquarters, and the purchase of sites for the same. Six: Bonds numbered from seventy five hundred and thirty-one to eighty-five hundred and thirty, both inclusive, (one million dollars) and the proceeds from the sale thereof, shall be used for the construction, reconstruction and extension of bridges and viaducts within the city, and the purchase of lands for such purposes. Seven: Bonds numbered from eighty-five hundred and thirty-one to ninety hundred and thirty, both inclusive, (five hundred thousand dollars) and the proceeds from the sale thereof, shall be used for establishing, opening and constructing Kingshighway boulevard, to meet that portion of the cost and expense which under the laws of the State of Missouri and the Charter of the City of St. Louis, said City is required to pay. Eight: Bonds numbered from ninety hundred and thirty-one to ten thousand five hundred and thirty, both inclusive, (one million five hundred thousand dollars) and the proceeds from the sale thereof, shall be for the construction, reconstruction and extension of public sewers and the purchase of land therefor. Nine: Bonds numbered from ten thousand five hundred and thirty-one to eleven thousand two hundred, both inclusive, (six hundred and sev-

enty thousand dollars), and the proceeds from the sale thereof, shall be used for the construction and laying out of public parks and squares and purchase of land thereof. The proceeds arising from the sale of bonds for each of said separate purposes shall be kept separate and distinct, and such proceeds shall be used for the specific purpose herein prescribed, and for no other purpose; provided, that if the sum voted and herein provided for any one or more of the above purposes should prove more than sufficient, or if it is finally judicially determined that the sum voted for any one of the above purposes can not be used for such purpose, then such sum or such excess shall be placed to the credit of the general sinking fund of the said City of St. Louis. And no judicial determination in respect of any one or more of such purposes shall invalidate this ordinance or effect any other of such purposes or any other provision of this ordinance, or the bonds issued for any other purpose.

Section 6. An annual tax shall be levied sufficient to provide for the payment of the interest on said bonds and sufficient also to provide a sinking fund to meet the principal of said bonds at their maturity, as required by law. The faith and credit of the city are hereby inviolably pledged to each holder of said bonds for the punctual payment of the principal and interest of said bonds, and the provisions of this ordinance shall constitute a contract with the holder of such bonds and shall be irrevocable while such bonds remain outstanding and unpaid.

Approved Nov. 26, 1906.

Exhibit VI.

ORDINANCE No. 23315.

An ordinance to locate the Municipal Bridge across the Mississippi River.

Whereas, by act of Congress of June twenty-fifth, nineteen hundred and six, the City of St. Louis was authorized to construct a bridge across the Mississippi River; and whereas,

The City of St. Louis is, by the Statutes of the State of Missouri, and the Charter of the City of St. Louis, authorized to construct said bridge and to borrow money and to issue negotiable bonds therefor; and, whereas,

At an election called in pursuance of Ordinance

Number Twenty-two Thousand Three Hundred and Sixty-six, the voters of the City of St. Louis by an overwhelming majority voted to borrow money and to issue bonds for the purpose of constructing and maintaining a municipal bridge; and whereas,

The Supreme Court of the State of Missouri, in an action questioning the validity of the said bonds, has affirmed their validity; and, whereas,

A joint committee of the two houses of the Municipal Assembly, after a thorough investigation of possible sites, have reported in favor of the location of the western end of said bridge at or near Chouteau avenue, and whereas the said two houses approved said report; now, therefore,

Be it ordained by the Municipal Assembly of the City of St. Louis, as follows:

Section One. The western terminus of the Municipal Bridge provided for by Ordinance Number Twenty-two Thousand Three Hundred and Sixty-six, shall, subject to the approval of the proper authorities of the United States Government, be located at or near Chouteau avenue on the western bank of the Mississippi River, and the eastern terminus at some convenient point of the eastern bank opposite or nearly opposite Chouteau avenue.

This bill, viz.: "Council Bill No. 175. An ordinance to locate the Municipal Bridge across the Mississippi River," vetoed by the Mayor, November 22d, 1907, passed by the Council November 22d, 1907, the objections of the Mayor thereto notwithstanding by the following vote: Ayes—9. Noes—3. Absent—0. Vacancy—1.

H. A. FORMAN,

President of the Council.

Attest:

GEORGE F. MOCKLER,

Secretary of the Council.

This bill, viz.: "Council Bill No. 175. An ordinance to locate the Municipal Bridge across the Mississippi River," vetoed by the Mayor, November 22d, 1907, passed by the House of Delegates, the objections of the Mayor thereto notwithstanding, by the following vote: Ayes—25. Noes—0. Absent—3.

ISAAC CONRAN,

Speaker, House of Delegates.

Attest:

THOS. J. LEONARD,

Clerk, House of Delegates.

St. Louis, Mo., November 23, 1907.

I hereby certify that at 10:02 o'clock a. m., this day, I received from George F. Mockler, Secretary of the Council, this bill which is known as Council Bill Number 175, and which I now number as Ordinance Number 23315.

PATRICK J. REGAN,
City Register.

Exhibit VII.

ORDINANCE No. 25979.

An ordinance authorizing and fixing the location of the railroad approach of the western approach of the Municipal Bridge, from a point in the west line of Broadway, where the same intersects the railroad approach located on the one hundred foot right-of-way, condemned under authority of Ordinance Number Twenty-four Thousand Four Hundred and Fifty-six, to a point in the center line of Gratiot street, to the east line of Twenty-third street, produced.

Whereas, a joint committee of the two Houses of the Municipal Assembly, appointed to recommend a proper location to the Municipal Bridge, have reported in favor of connecting said railroad approach located on the one hundred foot strip of land condemned for the western approach of the Municipal Bridge at a point in the west line of Broadway, twenty and eight-tenths feet north of the north line of Papin street, and thence in a northwestwardly direction, so as to have the center line of the railroad approach strike the center line of Gratiot street at a point about thirty-seven feet east of the east line of Eighth street; thence to continue westwardly along the center line of Gratiot street for a distance of ten thousand six hundred and eighty-three feet to the east line of Twenty-third street, produced, and

Whereas, the said two houses have approved said report. Now, therefore,

Be it ordained by the Municipal Assembly of the City of St. Louis, as follows:

Section One. One of the railroad approaches of the western approach of the Municipal Bridge shall be located as follows: The center line of said railroad approach to begin at a point in the west line of Broadway, twenty and eight-tenths feet north of the north line of Papin street

(which point is in the center line of the railroad tracks located on the right-of-way appropriated and condemned under authority of Ordinance Number Twenty-four Thousand Four Hundred and Fifty-six); thence running northwestwardly in a straight line thirty-six and five-tenths feet more or less, to a point twenty-nine feet north of the north line of Papin street and thirty-five feet west of the west line of Broadway, both distances being measured at right angles to said streets, thence along a curve to the right, having a radius of six hundred and thirty-seven feet, to a point distant one hundred and twenty feet north of the north line of Papin street and twenty-nine feet east of the east line of Sixth street, both distances being measured at right angles to said streets, thence northwestwardly on a straight line a distance of three hundred and sixty-three and five tenths feet more or less, to a point distant fifty-nine feet east of the east line of Seventh street and eighty-one and five-tenths feet south of the south line of Gratiot street, both distances being measured at right angles to said streets, thence along a curve, to the left, having a radius of six hundred and thirty-seven feet east of the east line of Eighth street, produced, thence running westwardly along, over, under and across Gratiot street, with two or more tracks, ten thousand six hundred and eighty-three feet to the east line of Twenty-third street, produced.

Approved July 17, 1911.

Exhibit VIII.

ORDINANCE No. 29501.

An ordinance prescribing the terms and regulations under which railroads, terminal railroads, street railways and interurban railroads, either steam, electric or otherwise, may use the Municipal Bridge and providing compensation therefor; providing for the issuance of licenses therefor; and defining the St. Louis traffic zone and prescribing regulations as to traffic and rates for traffic therein and moving over the Municipal Bridge; creating a commission to be known as the Municipal Bridge Commission and defining the duties and powers of the commission; repealing Ordinance Number Twenty-six Thousand Five Hundred and Ninety-two, approved July Thirteenth, Nineteen Hundred and Twelve, and

Ordinance Number Twenty-eight Thousand Eight Hundred Fourteen, approved April Twenty-seventh, Nineteen Hundred and Sixteen.

Be it ordained by the City of St. Louis as follows:

Section One. Wherever used in this ordinance the words, "Municipal Bridge" shall mean the Municipal Bridge, the approaches thereto owned by the City of St. Louis, the equipment thereof and appurtenances thereto; and wherever the word "Railroad" is used in the ordinance, it shall be construed to mean any corporation or person owning or operating any railroad, terminal railroad, street railroad or interurban railroad, either steam, electric or otherwise.

Section Two. There is hereby created a commission, to be known as the Municipal Bridge Commission, which shall perform such duties and exercise such authority as in this or any subsequent ordinance prescribed, and which shall consist of the Mayor, the President of the Board of Aldermen, the Comptroller, the Director of Streets and Sewers and the Director of Public Utilities of the City of St. Louis, who shall serve as Municipal Bridge Commissioners, without pay other than that received by them for the performance of the duties imposed upon them respectively in connection with their offices.

Section Three. The Director of Public Utilities is and shall be charged with the care, regulation and control of the physical property of the Municipal Bridge, and the operation of the same; and, subject to such general regulations as may from time to time be adopted by the Municipal Bridge Commission, he shall make and enforce such rules and regulations for the hauling and movement of traffic over and upon the said bridge and approaches as he may from time to time deem necessary or proper for the interests of the public and for the commerce of St. Louis.

Section Four. Any railroad or other common carrier of passengers or freight may make use of the Municipal Bridge, and may operate trains or cars over and upon the same after application to the Municipal Bridge Commission, and upon the issuance by the said Commission of a license therefor, and upon the payment of such compensation as may be required by ordinance, or fixed by the Secretary of War of the United States

of America. Each such license shall contain a provision that it is issued to the applicant upon the condition, and upon the express agreement of the applicant, that it will observe and faithfully obey the provisions of this and all other ordinances of the City of St. Louis, and all rules and regulations which may be established for the use of the said bridge. No railroad shall be allowed to use the Municipal bridge without such a license.

Section Five. No license to use the Municipal Bridge shall be issued for any stated term or period.

Section Six. No license for the use of the Municipal Bridge shall be assigned, either by voluntary or involuntary conveyance, nor transferred nor made use of by any other than the railroad, terminal railroad, street railroad, or interurban railroad, either steam, electric or otherwise, to which it was originally issued.

Section Seven. As a condition precedent to receiving a license to use the Municipal Bridge, any railroad, terminal railroad, street railroad, or interurban railroad, either steam, electric or otherwise, desiring such license, shall execute and file in the office of the Register a written acceptance of the terms of this ordinance, and an agreement to comply with the same and with all future ordinances, rules and regulations which may be adopted by the said city; and shall also file with the Register a penal bond to the City of St. Louis in the sum of not less than twenty-five thousand dollars nor more than one hundred thousand dollars as may be determined in each case by the Municipal Bridge Commission, with a surety or sureties to be approved as to the form of the bond, by the City Counselor and, as to the sufficiency thereof, by the Comptroller, of the City of St. Louis, conditioned for the faithful performance by it of each and all of the provisions of this ordinance, and of all other ordinances, rules and regulations of the City of St. Louis, now in force, or which may hereafter be enacted or made, and to hold the City of St. Louis harmless from any and all loss or damage, suits, judgments, costs and expenses occasioned directly or indirectly by the fault, default, negligence, damage to persons or property, or mis-carriage of such railroad, terminal railroad, street

railroad, or interurban railroad, either steam, electric or otherwise, in the use of the Municipal Bridge. Provided, however, that if any railroad, terminal railroad, street railroad or interurban railroad shall deem unsatisfactory and desire not to accept any additional conditions which may be imposed by ordinance or otherwise, said railroad shall be permitted to relinquish its license and thereupon its bond shall be cancelled as soon as all obligations thereunder shall have been discharged and thereupon said railroad shall immediately cease to use the bridge.

Section Eight. Every license shall be in accordance with the provisions of this ordinance, and shall bear the signature of a majority of the members of the Municipal Bridge Commission. The form of such license and of the acceptance thereof shall be determined by the Municipal Bridge Commission.

Section Nine. For the purpose of this ordinance, territory embraced within the corporate limits of the City of St. Louis, in the State of Missouri, and within the corporate limits of the City of East St. Louis, in the State of Illinois, shall be considered as one traffic zone, to be known as the "St. Louis Traffic Zone." The passenger rates of any railroad using the Municipal Bridge shall be such that the fare from any point outside of said traffic zone shall be the same to all points reached by its passenger cars inside of said traffic zone; and the fare to any point outside of said traffic zone shall be the same from all points within said traffic zone. The freight and express rates of any railroad using the Municipal Bridge shall be such that the charge on any given commodity or class of freight or express matter from any point outside of said traffic zone shall be the same to all points reached by its lines within the said zone; and the freight or express rates to any point outside of said traffic zone shall be the same from all points within the said traffic zone. No railroad using the Municipal Bridge shall charge more than five cents for carrying a passenger from any point within the said traffic zone to any other point within said zone, provided that children under twelve years of age, and over five years of age, shall be charged not more than two and one-half cents, and children under five years of

age shall ride free. No railroad using the Municipal Bridge shall make other charges for intra-zone freight or express matter passing over the Municipal Bridge than shall be fixed from time to time by the City of St. Louis through properly constituted authorities, or by the Secretary of War, acting under authority of the Act of Congress, approved March Twenty-third, Nineteen Hundred and Six.

By the words "intra-zone traffic," as herein used, is meant traffic whose points of origin and destination are both within the St. Louis traffic zone, provided that if any such railroad connect with and operate over the tracks of any terminal railroad, then such terminal railroad shall be treated and considered as a terminal agent of said connecting railroad, and the tracks of such terminal railroad shall be treated and considered as the lines of said connecting railroad for the purpose of securing the sameness of rates on passengers, freight and express, as herein provided.

Section Ten. No railroad having a license to use the Municipal Bridge shall make use of said bridge in the transportation of passengers, freight or express matter for any other corporation or individual engaged in the forwarding or transportation of passengers, freight or express matter, if the charges or rates for such passengers, freight or express matter shall, in effect, either directly or indirectly, violate the provisions of this ordinance.

Section Eleven. For the purpose of affording to any other railroad access to and passage across, and from the said Municipal Bridge, any railroad which may have obtained a license to use the Municipal Bridge shall allow such other railroad to use, jointly with it, its tracks or any part thereof, and also its trolley wires and electric power, if so desired, in both the City of St. Louis, in the State of Missouri, and the City of East St. Louis, in the State of Illinois, and also to a point two miles beyond the limit of each of said cities, respectively, if the tracks of the said company extend beyond such city limits; provided that any company so desiring to use such tracks shall also first have obtained from the said Municipal Bridge Commission a license to use the said bridge. Charges for the use of such

tracks, trolley wires and electric power shall be upon a "wheelage basis," that is, in proportion to the number of locomotives and cars of all kinds passing over the tracks in question; shall be determined annually by authorized officers of the proprietary line and the using line or lines (subject to the verification and approval of the said Municipal Bridge Commission, and subject also to the approval of the Secretary of War of the United States of America, in cases of appeal to him); and shall be payable at such times as may be agreed upon. The use of such tracks, wires and power shall be governed by rules and regulations to be agreed upon by such railroad and the railroad desiring to use its tracks. In case the railroad owning or controlling the tracks and the railroad desiring to use the same are unable to agree upon the amount of the compensation, based upon the number of locomotives and cars of all kinds, for such use or for the use of trolley wires and electric power, or are unable to agree upon the rules and regulations governing the joint use thereof, as aforesaid, then each party shall appoint an arbitrator, and these two shall appoint a third arbitrator, who shall investigate the facts and decide the questions submitted, and the parties to the controversy shall abide by the decision of a majority of the arbitrators. In case there is an undue delay or neglect on the part of either of the parties appointing an arbitrator, or in the selection of a third arbitrator by the two selected by the parties, or any unreasonable delay in the decision of the arbitrators when appointed, then either of the parties may appeal to the Municipal Bridge Commission to determine the compensation as aforesaid, and to determine also the rules and regulations for the use of the tracks, trolley wires or electric power, and the decision of the Commission therein shall be final and binding. Providing, that it is not intended by this section that any railroad which shall have been granted a license to use the said bridge, shall be under obligation to permit any other railroad company to use its tracks for traffic originating on or destined to points on the track or tracks of such railroad (including any switches or sidings connected therewith); nor for any traffic which does not cross the Municipal Bridge.

Section Twelve. It being the duty of the City of St. Louis to maintain and operate the Municipal Bridge, every railroad using either deck of said bridge shall pay such reasonable compensation therefor as may hereafter be prescribed by ordinance of the city, and also such additional compensation as may, by ordinance, be charged any such railroad, having a license therefor, for the privilege of transporting over the said bridge passengers, freight or express matter received by it from any other railroad company at any point within the St. Louis traffic zone, or delivered to it within or without said zone, by any belt or terminal railroad receiving the same from the railroad having a terminus within said zone, to be carried over the Municipal Bridge, in continuation of the transportation of said other railroad's business across said bridge.

Section Thirteen. The Comptroller of the City of St. Louis shall have charge of the keeping of the accounts between the city and the railroads using the bridge, and shall prepare and render to such railroads statements of such accounts. It shall also be his duty to see that all charges or penalties are properly paid to the city. For the purpose of the keeping of proper accounts and the making of proper charges, the Comptroller and his duly authorized representatives shall, at all proper times, have access to the books and records of railroads having licenses to use the Municipal Bridge.

Section Fourteen. All the funds collected as payment for the use of the Municipal Bridge, or received as the result of fines or penalties against the companies, firms or individuals having licenses to use the bridge shall be placed in a separate fund, which shall be used exclusively, First, to pay the operating and maintenance expense of the bridge; Second, for the payment of interest on Municipal Bridge bonds; and Third, for payment and retirement of said bonds.

Section Fifteen. It shall be the duty of the Municipal Bridge Commission to take cognizance of all violations or evasions of the provisions of this ordinance, and of the rules and regulations governing the use of the bridge, either by shippers or by railroads, terminal railroads, street railroads, or interurban railroads, either steam, electric or otherwise, using the Municipal Bridge.

And it shall be the duty of the said railroads to aid the city in the prevention of any violation or evasion thereof by shippers by adopting and maintaining such shipping or billing regulations as may be determined upon by the Municipal Bridge Commission.

Section Sixteen. Each Commissioner is hereby authorized and empowered to administer oaths and affirmations in matters incident or belonging to the exercise of the duties or powers of the Commission, and the Municipal Bridge Commission is hereby empowered to require, by subpoena, the attendance and testimony of witnesses, and the production of books, papers and documents in any hearing or investigation conducted by the said Commission in respect to any matter or thing pertaining to freight or passenger traffic destined for or originating in or passing through the City of St. Louis, or the said St. Louis traffic zone.

Section Seventeen. The Municipal Bridge Commission may make rules for its guidance and procedure under the provisions of this ordinance, and may regulate the mode and manner of procedure in all investigations and hearings before it. And the said Commission may employ such experts and other persons as in its judgment may be necessary to carry out the provisions of this ordinance, and shall, subject to ordinance, fix their compensation.

Section Eighteen. If, after a hearing or investigation, the Municipal Bridge Commission, or a majority thereof, shall find that any railroad, terminal railroad, street railroad or interurban railroad, either steam, electric or otherwise, having a license to use the Municipal Bridge, shall have been guilty of any violation of the provisions of this ordinance, or of the rules and regulations for the use of the bridge, the said Commission may suspend or revoke the license of such railroad, terminal railroad, street railroad, or interurban railroad, either steam, electric or otherwise. But no license shall be revoked unless such railroad, terminal railroad, street railroad, or interurban railroad, either steam, electric or otherwise, shall first have been given at least twenty days' notice in writing, prior to such hearing or investigation by delivery thereof to any office of such railroad, terminal railroad,

street railroad, or interurban railroad, either steam, electric or otherwise, in the City of St. Louis, to any officer of such railroad, or to any person in charge of such office, or by posting of such notice on some conspicuous part of the Municipal Bridge, or in any other manner which may hereafter be prescribed by ordinance.

Section Nineteen. Any refusal or neglect of any railroad, terminal railroad, street railroad, or interurban railroad, either steam, electric or otherwise, to pay any bridge charges as assessed by the City, for a period of ninety days, shall be cause for revocation or suspension by the Municipal Bridge Commission of its license to use said bridge.

Section Twenty. The Municipal Bridge Commission shall, from time to time, and as it may deem necessary or proper, report to the Board of Aldermen, for passage or rejection by it, bills or proposed ordinances providing other and further penalties for violations of the provisions of this or other ordinance relative to the Municipal Bridge, or of the rules and regulations which may be prescribed by the said Commission.

Section Twenty-one. Nothing in this ordinance, nor in any contract or agreement between any two or more railroads which may hereafter be entered into under the provisions hereof, shall be understood or construed as constituting a waiver of or bar to the right of any railroad to obtain direct connections between its tracks and the City's present approaches, to said bridge, or any extension or extensions thereof. And nothing in this ordinance contained shall be construed as waiving the right of the City of St. Louis, as the agent of the government of the United States of America, pursuant to the Act of Congress aforesaid, approved June Twenty-fifth, Nineteen Hundred and Six, or any other law, to construct, extend, maintain and operate approaches to the said bridge, in the States of Illinois and Missouri, additional to or in extension of the approaches now existing and in process of construction.

Section Twenty-two. Ordinance Number Twenty-six Thousand Five Hundred and Ninety-two, entitled "An ordinance to fix the terms and regulations under which railroads, street railroads, and interurban railroads shall be permitted to use the Municipal Bridge; placing the care,

regulation and control of said bridge under the jurisdiction of the street commissioner; authorizing the street commissioner to make and enforce rules for the operation of traffic thereon; and creating a commission, consisting of the Mayor, Comptroller and Street Commissioner of the City of St. Louis, and placing the regulation and control of the use of said bridge under the jurisdiction of said commission; defining the duties and powers of the commission and the

street commissioner with respect to said bridge," approved July Thirteenth, Nineteen Hundred and Twelve; and Ordinance Number Twenty-eight Thousand Eight Hundred and Fourteen, entitled, "An ordinance in revision of Ordinance Number Twenty-six Thousand Five Hundred and Ninety-two, relating to the Municipal Bridge," approved April Twenty-seventh, Nineteen Hundred and Sixteen, are hereby repealed.

Approved Feb. 21st, 1917.

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